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AMIGA SHOPPER

From the makers of AMIGA FORMAT

ISSUE 24 ● APRIL 1993 ● £1.50

YOUR DEFINITIVE AMIGA GUIDE



Find your way out of the memory maze

All aspects of Amiga RAM explained PLUS detailed reviews of 14 memory expansion options

INSIDE

AMIGA ANSWERS

Ten pages packed with solutions to all your problems with the Amiga. Whatever your

PLUS

News, Readers' Letters, and columns on Music, Video, AMOS, AmigaDOS, Education, C Programming, Do-It-Yourself Hardware Repairs and ARexx

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AMIGA SHOPPER AT-A-GLANCE GUIDE

To help you find what you want quickly and easily, this is a cross-referenced list of all the products and subjects covered in this month's *Amiga Shopper*. You'll find a detailed index to the many subjects dealt with in the problem-solving *Amiga Answers* section given on page 23. The page numbers given are for the first page of the article in which the subject is mentioned.

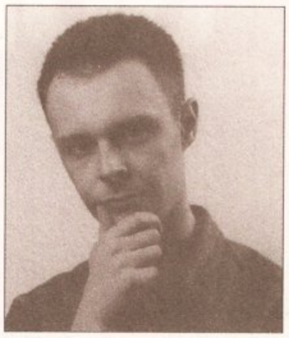
Are there any products or subjects you'd like us to take a look at? Well, just drop a line to:

Amiga Shopper,
30, Monmouth Street,
Bath BA1 2BW.

WELCOME

It was TS Eliot who described April as the cruellest month for its mixing of memory with desire. Well, he was wrong – this month we fulfil your desires by providing a complete guide to Amiga memory. Not only do we give you the low-down on just what all the different types of memory expansion are, but we also review 14 different products to ensure you make the right purchase for your needs. Let's face it, a half or single Megabyte of RAM is fine for playing games, but if you want to get serious then you really do need more. Turn to our main feature starting on page 14 to find out how you can get it.

Those of you who own (or are about to buy) modems are in for a special treat this month. We've tied up a deal with the people at the Compulink Information eXchange to give you all free membership. This normally costs £25 plus VAT, so we're saving you a substantial amount of money. CIX is a huge electronic bulletin board/ conferencing system where you can engage in lively debate, get advice on problems and talk to many of *Amiga Shopper's* regular writers. Details of how to get your CIX for free are on page 73.



As you've come to expect, we're also carrying a whole load of reviews, including an in-depth look at *Art Expression*, a structured drawing program that should offer some stiff competition to industry-standard Mac illustration packages.

Sadly, the Amiga world has taken a couple of blows this month, with the huge dealer chain Future World calling in the administrators and Fred Fish threatening to close down his public domain library. Read the full stories on pages 7 and 107.

I hope you enjoy the issue!



Editor

PUBLIC DOMAIN WORLD

DISHING UP THE FISH

There are thousands of Amiga programs which are available for little more than the price of a disk. There are also many, many more which you can try out before you buy. Each month in Public Domain World we examine the best of these programs and explain how to get hold of them.

This month we look again at the latest batch of programs from the world famous Fred Fish collection, and carry alarming news about its possible demise. Public Domain World or

School's out for summer?

as we call it this month, starts on page 107.

AMIGA ANSWERS

10 PAGES DEVOTED EXCLUSIVELY TO ANSWERING YOUR QUESTIONS

Every month in Amiga Answers our panel, comprised of experts from each of the major fields of Amiga computing, answers more genuine reader questions than any other Amiga magazine. And in the Code Clinic all your programming errors will be explained and corrected as well!

We answer questions every month on Workbench • The CLI • Comms • Programming • DTP • Video • Business software • And more!

THE ANSWERS START ON PAGE 23

FOR A FULL LIST OF CONTENTS, TURN THE PAGE

Your guarantee of value

This magazine comes from Future Publishing, a company founded just seven years ago, but which now sells more computer magazines than any other publisher in Britain. We offer:

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Issue 24 April 1993
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So who fancies a year's free subscription? OK, well have a go at this: which of Shakespeare's plays was considered flawed by TS Eliot, because of its lack of an 'objective correlative'? Send your answers to: 'Surely subjectivity is objective', *Amiga Shopper*, 30 Monmouth St, Bath, BA1 2BW. First correct answer out of the bag wins 12 free issues. Last month's winner was Paul Groves of Alfreton in Derbyshire, with 'Ajax'.

IN BRIEF

FLYING GRAPHICS

Effortless animation for titles and graphics is possible using Mediascape's *Flightpaths* utility, now available for *Deluxe Paint IV*. From a library of 200 moves you can have your captions loop, spiral and pirouette before slotting neatly into place. *Flightpaths* costs £49.95 (plus £1.90 p&p) and can be obtained in the UK from Meridian Software ☎ 0533 863501.

SWIFT 2 DRIVER

Citizen have released a new AmigaDOS 2.0 printer driver to support the Swift 2 series of 24-pin colour dot matrix printers. The driver retails for £14.10. Citizen ☎ 0753 584111.

SPIKE PROTECTION

Voltage surges (spikes) on the mains are one of the most common causes of computer crashes. The Noiseguard from Schaffner EMC Ltd is a high-specification two-stage filter designed to suppress mains spikes. The Noiseguard can handle any load up to 10A at 250V and costs £57.58. Schaffner EMC Ltd ☎ 0734 770070.

BACKUP PRO

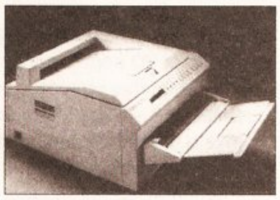
The latest version (9.92) of the multi-purpose disc utility package *X-Backup Pro* is now available from Siren Software for £39.99. You can reach Siren on ☎ 061 724 7572.

MUSIC LIBRARIAN

Music Librarian, a sophisticated new information management package for musicians, has just been released by Applied Research Kernel (also known as 'ARK'). It's primarily aimed at professional users such as disk jockeys and music librarians, and retails at £39.95. For more information contact ARK on ☎ 0983 551496.

Epson, Ricoh and Xerox laser printers





Epson, Ricoh and Rank Xerox all have new offerings in the laser printer arena this month.

From Epson comes the EPL-5200 (as a replacement for the EPL-4300 model) with 300 dots per inch (dpi) resolution. Priced at £929, it is driven by a 68000 processor that is clocked at 16.67MHz and comes with 13 scalable and 28 bit-mapped fonts. The EPL-5200 has a first page print speed of 19 seconds and you can expect to get 6000 pages (at 5% print density) from the toner cartridge. 1Mb of memory is supplied and this can be expanded to 5Mb.

The EPL-5200 supports as standard HP IIISi; FX; GL-2 and LQ emulations. Epson ☎ 0442 61144

Ricoh has released a 4Mb version of its LP1200 laser printer. Selling for £799 (compared to £699 for the 2Mb model) it has an impressive 400 dpi print resolution and a rapid first page print speed of 15 seconds. The toner cartridge will produce 5000 copies (at 5% print density). Four bit-mapped and 6 scalable fonts are provided and LaserJet III, PCL5 and HP-GL/2 emulations are supported. We tested the 2Mb version of the LP1200 in our printer round-up of two issues ago (February '93) where it scored top marks. Ricoh printers are distributed in the UK by Silica Systems ☎ 081 309 1111.

Rank Xerox has two variants of the same printer, the 4010 II (£869) and 4010 III (£1,095). Both printers have 300 dpi resolution and boast a first page print speed of 34 seconds. The 4010 II is supplied with 11 resident bit-mapped fonts and 512K RAM, while the 4010 III has 15 fonts and 2.5Mb RAM. Both machines can be upgraded to take 4.5Mb RAM. Their toner cartridge will produce 1500 copies (at 5% print density). An on-site warranty is included in the purchase price of each machine. In the case of the 4010 II this is for one year, while the 4010 III is supported for three. Rank Xerox ☎ 0895 251133.

FUTURE WORLD PLACED IN ADMINISTRATION

Bedford-based company Future World Computers Ltd has been placed in administration at the request of its directors. Future World, which also traded as Dynamite Computers, ran six shops and a mail order service.

It's believed that many of its customers have outstanding orders placed with the company. When asked what a customer's chances are of recovering any money owed, a spokesperson for the administrators replied: "Very slim really – we're trying to see what we can sort out." Future Publishing, the publisher of *Amiga Shopper*, is itself owed a substantial sum.

WHAT TO DO

Customers who have not received goods, have received faulty goods or only partial delivery of their order, are urged to contact the administrators as soon as possible.

- If you bought your goods via credit card, and the total cost came to more than £100, then you will be covered by insurance. Contact the credit card company.
- Some credit card companies also insure claims under £100 for 90 days following the purchase.
- Otherwise write to the administrators as soon as possible, outlining your complaint in full.

The administrators are: Pannell Kerr Forster, 159 Charles Street, Leicester LE1 1LD ☎ 0533 856611.

The company was placed in administration on January 27th, following an attempt in December to increase the company's viability by closing down its mail order operation. At that time the then-Managing Director Raj Ling left for health reasons, leaving his partner Karl Morton in charge.

Morton's accountants advised him to put the company in administration. As a result three of the six retail outlets have been closed, making four redundancies. A buyer for the company is currently being sought, with adverts being placed in the Financial Times. Currently around 40 people have expressed an interest. Any money gained will go towards reimbursing creditors and customers expecting money or goods.

There may be advertisements for Future World or Dynamite Computers appearing in the press that have not been cancelled in time. The mail order service is closed and readers should not respond to such adverts.

Amiga Shopper would like to assure its readers that the vast majority of the mail order companies advertising in the magazine are professional and creditable.

Oki extends life of print heads

Oki has launched two 9-pin dot matrix printers incorporating 'intelligent print head technology'.

The print heads in these two new printers sense the thickness of the loaded paper and automatically adjust to retain the optimum distance between head and paper. This helps cut down on print head wear, reducing operating costs. It also makes the printers ideal for situations in which different types of stationery, such as letters, envelopes and forms, are regularly interchanged.

The two models are named the ML520 and the ML521, the latter being a wide carriage version. They will print up to 433 characters per second in draft mode and 81 cps in letter quality. Emulations supported are Epson FX, Microline and IBM Proprinter/AGM.

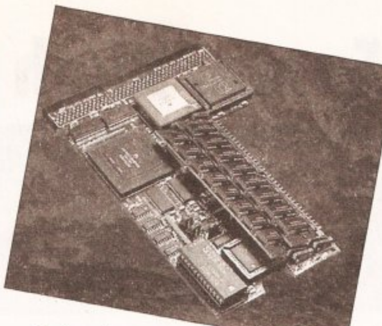
The ML520 costs £499, while the ML521 costs £599. If you'd like more details, Oki can be contacted on ☎ 0753 819819.

GVP accelerator board

Great Valley Products (perhaps better known as 'GVP') has just released an accelerator board for the A1200 called the A1230 Turbo.

Priced at £399 the A1230 is based around a 68030 processor which is clocked at 40MHz. The board comes with 1Mb of on-board RAM and also has two SIMM sockets that will accept 1, 4 or 16Mb SIMMs – giving a maximum configuration of 32Mb of 60 nanoseconds DRAM. A socket is also provided for a Floating Point Unit – when installed this will give a dramatic speed improvement for all those floating point mathematical operations.

The GVP A1230 accelerator is distributed in the UK by Silica Systems ☎ 081 309 1111.



Turbo-charge your new A1200 with GVP's A1230 processor accelerator

AMIGA FORMAT LIVE '93 SHOW UPDATE

WEMBLEY EXHIBITION CENTRE
7 – 9 MAY 1993

Details of May's *Amiga Format Live* show are beginning to come thick and fast, with several major players in the Amiga market confirming their attendance.

The show, which takes place at Wembley between the 7th and 9th of May, looks set to be something very special, with companies such as Commodore, Digita International, HB Marketing, ICD, Power Computing, Rombo and Silica Systems ready to exhibit their wares. As well as the tried and trusted products that have made these companies' names in the past, many exciting new launches are also slated to make an appearance, though the companies are naturally reluctant to spoil the surprise at this stage by revealing what these may be.

Commodore will of course be there in force. The company's National Marketing Manager Dawn Levack said: "Having discussed the direction to be taken by the show with Future, we feel that our interests couldn't be in better hands," – Future (Publishing) being the company behind both *Amiga Format* and *Amiga Shopper*.

As well as having the opportunity to see all the best in Amiga hardware and software and picking up plenty of great bargains, you'll also get the opportunity to participate in a number of special events. These include the renowned *Amiga Answers* expert panel, who will be there to solve your hassles and give advice live; the *Amiga Power* games arcade, where you'll get a chance to let off some steam; and the *Sound and Vision Experience*. This latter will be an area in which you will find a sound studio, a graphics studio and a full scale video production facility. If you were wondering what your Amiga is capable of, then look no further.

For more details, including how you can guarantee your place by booking your ticket in advance, turn to page 102.

Drive controller for A500

A500 owners who want to take advantage of the cheaper IDE hard drives will be interested in GoldenIMAGE's latest product. Alfa-Power is an integrated IDE controller and memory upgrade card.

It is compatible with the A500 and the A500 Plus and will accept up to 8Mb of memory using 1Mb x 4 Zip packages, and either two 2.5-inch hard drives or a single 3.5-inch unit. A mounting bracket, software and the necessary IDE cables are provided. A connector is provided for an external power supply.

AlfaPower costs £99 without memory or hard drive, from GoldenIMAGE ☎ 081 3651102.

A1200 real time clock

Prima Technologies has released a real-time clock for the A1200.

The company's battery-backed clock fits internally and works with AmigaDOS' date and time functions. It costs £15 from the First Computer Centre ☎ 0532 319444, and is compatible with the Microbotics MBX1200 RAM expansion board.

BLIZZARD MEMORY BOARD

German-based company Phase 5 Digital Products has released a Fast RAM expansion board for the A1200, plus a SCSI controller for the A4000.

The Blizzard 1200/4 memory board is installed in the trapdoor slot of the A1200 and comes with 4Mb of factory-installed 32-bit zero wait state Fast RAM. While obviously providing more memory for applications or data, access time is also significantly faster than for the A1200's built-in memory, so increasing operating speed.

The Blizzard board has an on-board connector that allows a further 4Mb of Fast RAM to be added by attaching a Blizzard 1200/ADD4 memory module. Furthermore, the board has a socket for a maths co-processor (68881 or 68882) that will greatly enhance the speed of floating point intensive operations. The 1200/4 board is available for £249, with the additional 4Mb expansion module priced at £199.

Phase 5 Digital Products ☎ 01049 69 548 1844.

MARCAM GENLOCK

Marcam has added an effects box to its 8802 Genlock system. Called the Marcam Rendale 8802 FMC Genlock and selling at £178, the additional effects box is used to control the mode in which the Genlock operates.

This means that you can control the balance between the Amiga and video display – picking either Amiga only, video only or what is termed foreground mode. In the foreground mode the Amiga background colour will become transparent, which leaves any Amiga graphics that are not in the background colour overlaid above the video input.

Marcam products are handled by Meridian Software Distribution Ltd. For more details you can call ☎ 081 543 3500.

TV MODULATOR REPAIRS

A500 users with broken TV modulators can now get them replaced by Trilogic. For £20.99 (which includes postage) Trilogic will repair or exchange the defective unit which then comes with a six month guarantee. You must send the damaged modulator with your order – they're like gold dust and Trilogic recycle all of them. If you happen to be sitting on a pile of A500 modulators in any condition then Trilogic would like to hear from you.

Trilogic also offers a 15-inch modulator extension lead that provides a flexible connection between the Amiga and modulator enabling the two units to be separated – so reducing the chance of the modulator falling out and being damaged. The extension lead costs £10.99. Trilogic ☎ 0274 691115.

IMAGES ON T-SHIRTS

For the past eighteen months Studio 101 has been offering Amiga users the opportunity to have their own designs printed on to white T-shirts. This service has now been extended to printing on black shirts as well. The printed T-shirts are machine washable (although you are best advised not to use washing powders containing bleaching agents). All that you need to do is send a disk containing an IFF or 24-bit file of your design which will fit within the maximum print area of A3.

Prices are £7.99 (child) and £10.99 (adult) for white T-shirts. Black T-shirts cost £10.99 (child) and £15.99 (adult). Contact Studio 101: 101 Sudeley, Dosthill, Tamworth, B77 1JU. Or ☎ 0827 280884 after 6pm.

AVOIDING VOIDING

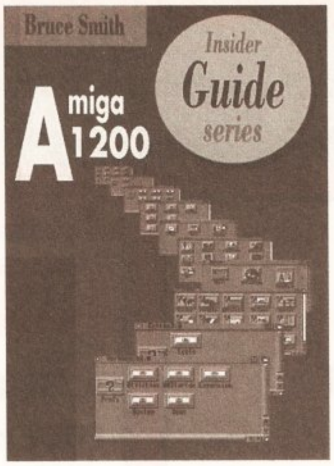
Worried about voiding the warranty on your Amiga if you open the machine to fit a hard drive? Then help is at hand from those helpful people at Trilogic.

They've arranged with a leading UK insurance company to offer owners two or three year warranties on both computer and drive.

For systems that are worth up to £600 the cost is £27.99 for two year cover and £42.99 for three. If your system is worth between £600 and £1000 you can get a two year warranty for £42.99 and three years for £67.99.

Warranties are only available for Amigas (and drives) that are less than a year old and there are certain restrictions – theft and wilful damage aren't covered. Neither is cosmetic damage that doesn't stop the computer from working. Trilogic ☎ 0274 691115.

BEGINNERS BOOK



Bruce Smith Books has just released *The Insider Guide to the A1200*. The book provides an excellent introduction to the A1200 – its 256 pages are organised into 24 chapters that have been written in an easily accessible tutorial style.

A valuable and innovative feature is the 55 'Insider Guide' panels. These use a series of annotated screen shots to provide a step-by-step guide to the particular operation being explained.

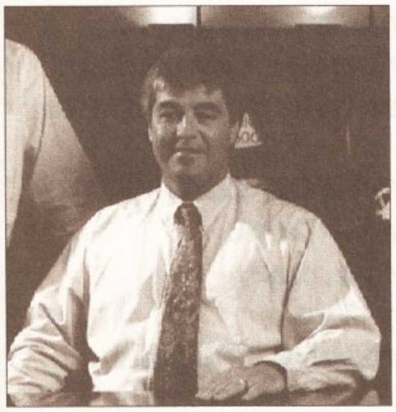
The Insider Guide A1200 is priced at £14.95 and can be obtained from Bruce Smith Books ☎ 0923 894355.

RED NOSE DAY



Commodore has produced a special Comic Relief Amiga 1200 pack to raise money for this year's appeal. For each of the 25,000 packs sold, Commodore is making a £10 donation to Comic Relief. The A1200 comes bundled with Ocean Software's specially-written Comic Relief game *Sleepwalker* and costs £399.

COMMODORE IN LEGAL BATTLE



Steve Franklin, ex-Managing Director of Commodore UK, is one of several facing a writ from the company

Commodore UK has served a writ against ex-Managing Director Steve Franklin, reports trade paper CTW.

The writ also applies to two former directors and four ex-employees of FMG, the now defunct company that undertook Commodore's repair commitments, as well as the co-owner of a failed Commodore re-seller. The writ alleges that Franklin is responsible for breach of contract, negligence and wrongful interference with Commodore's business. Damages from Franklin are being claimed.

Solicitors for the defendants have stated that their clients deny the charges, and that there is a possibility of a counter-action.

FMG went bust in October of last year with debts of £1.8 million. Of interest to any readers who are missing equipment that was with the company at the time of the closure is the writ's demand of an account of all the monies received on the sale or disposal of Commodore's goods.

Video for Sequencer One

Owners of the *Sequencer One* and *Sequencer One Plus* music packages will be interested to learn that Gajits Music Software has now produced a tutorial video. The video is divided into ten lessons that take the user from basic principles through to knowing everything that they need to know to record, edit and arrange their own music. Gajits Music Software ☎ 061 236 2515.

Silica price cuts

Stop press! GVP has knocked £50 off the price of its best selling hard drive for the A500 and A500 Plus, the 42Mb HD8+. Priced now at £299, the HD8+ is a high speed SCSI drive that is fitted externally – so it doesn't invalidate the Amiga's warranty.

Room is provided in the drive for 8Mb of internal RAM expansion as well as the addition of seven further SCSI devices. For further details contact Silica Systems on ☎ 081 309 1111.

Leeds gets new shop

Phoenix, the mail order Amiga suppliers are opening a store dedicated to the Amiga in Leeds.

The shop, to be known as Phoenix Computer World, will cover all aspects of the Amiga and its wide range of associated peripherals.

So, if you'd like to pop in next time you're in the area, you'll find the new store at Unit 2, York Towers, York Road, Leeds LS9.

Opalvision updates

Users of Opalvision 24-bit graphics cards will be interested to learn that update disks are now available in the UK. EM Computergraphic is distributing a two disk set priced at £5.99 (including postage). These disks contain *OpalPaint 1.4*, *OpalPresents 1.2*, *OpalHotkey 1.4*, *OpalAnimUtils 1.4*, *OpalLibrary 3.1*, all the new paper types, artist tools, draw modes and the *AdPro* display module for Opalvision. EM Computergraphic ☎ 0255 431389.

Director II graphics card

The Director II is a powerful new 32-bit graphics card from Tritec Marketing.

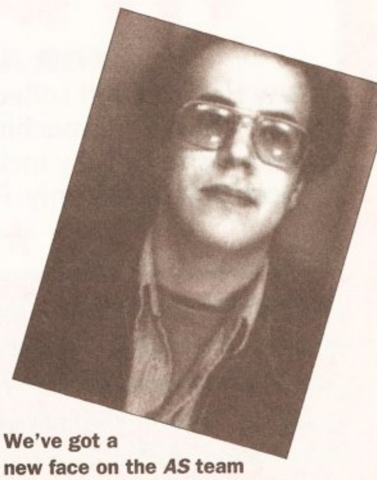
Based around a Texas Instruments TMS 34020 processor (which can be enhanced by the addition of a TMS 34082 maths co-processor) running at 32MHz, the Director II provides broadcast quality images and is designed primarily to support users with a need to produce high quality 3D graphics in-house. Tritec Marketing ☎ 081 991 5591.

NEW STAFF WRITER

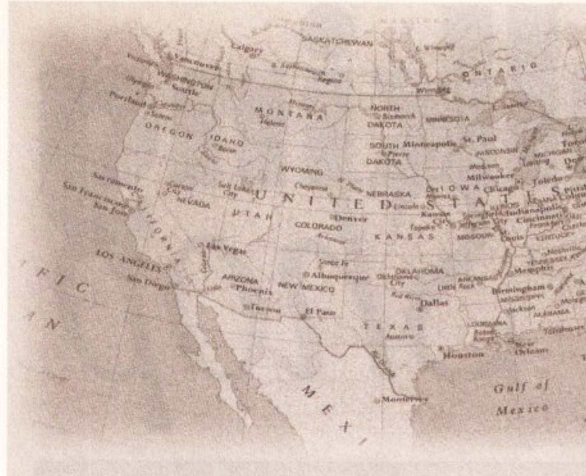
A new face joins the *AS* team this month – Gus Chandler, who takes up the illustrious position of Staff Writer.

Gus has had experience with a wide range of machines – from a valve-based GEC Elliott 800 to 68000 processor machines – including of course the Amiga. He has experience of programming in a variety of languages and in the early 80s worked for Central TV on a childrens' computer programme – *The Magic Micro Mission*.

Gus says: "I'm looking forward to working on *Amiga Shopper* – helping to make sure that we bring you those essential tips and techniques to let you get the most out of the Amiga."



We've got a new face on the *AS* team – that of Gus Chandler. Hello Gus!



STATESIDE

From touch screens to floptical disk drives, Amiga Cowboy Bob Liddil rounds up all the latest products from across the Atlantic

Picture your Amiga Cowboy as a mathematician, complete with white lab coat, chalk and blackboard, thick glasses and stetson. The reason for this radical change of image – a new program from Parth Galen called *FasTrig*. It speeds up program execution, and... well, let's hear what my arithmetical alter-ego, Professor Fuzzywig, has to say about it. Take it away, Professor!

"Ah, yes, quite. Hrrumph, now listen up you lot. There are four trigonometric functions used in almost all graphic, video, audio, simulation and engineering computer programs. Whichever of these applications you are constructing, the sine, cosine, tangent and arc tangent will probably be vital to the code you write. And if they are, they are also a critical bottleneck to your program execution speed. What can you do? Learn to live with slow programs? Or buy an accelerator?

"If you're faced with this situation, perhaps you should talk to the folks at Parth Galen. Their new program, *FasTrig*, is a package designed to replace the conventional transcendental function library routines most frequently used by application programs. *FasTrig* consists of a set of four object modules that allow the rapid software computation of the sine, cosine, tangent and arc tangent trigonometric functions. Object modules can be linked into executable tasks. The system is intended for use by programmers in code that requires high execution speeds, which means that it will not increase the speed of an existing program without first re-coding, re-compiling and re-linking the program.

ETERNAL TRIANGLES

"What's that? You're worried about compatibility? The object modules work on any Amiga, and with any of the floating point libraries you may be using. All *FasTrig* modules were compiled from C or assembly language code using the *SAS-C* (or *'Lattice-C'*) version 5.10 development system. Object modules will work when called from code compiled by other systems, but source code may have to be edited before re-compilation if using other development systems."

Fuzzywig, you old geezer, you are a long-winded buckaroo. Why don't you mosey on over to the saloon and have a cold one on me?

"I don't mind if I do. But before I go, I need to say that the suggested retail price for *FasTrig* is $55. The 60-page booklet, *Fast Trigonometry Using Binary Integer Arithmetic* can be purchased separately for $5.50. Contact Parth Galen, PO Box 482, Cold Spring, MN 56320, USA ☎ 0101 612 685 8871."

Sheesh – Fuzzywig talks faster than a carpetbagger caught on an electric fence! OK, back to our more usual business. If you get tired of typing or wiggling your mouse, then this next one might be for you.

A TOUCH OF CLASS

Turn any 13- or 14-inch display into a touch monitor! MicroTouch Systems Inc has introduced the QuikPoint GX140, a plug-and-play universal touch screen solution that easily snaps onto the front of any 13- or 14-inch monitor. The GX140 offers both quick integration and high touch performance to developers wanting to add touch capability to their multimedia, kiosk, training or other computer-based applications.

The GX140's controller card can be fitted on the PC bus, or can reside in a stand-alone box which connects to the computer's serial port. Installation, including the one-off calibration procedure, requires less than three minutes (your Amiga Cowboy's average attention span).

The MicroTouch screen consists of an all-glass sensor that has a uniform alternating current ('AC') electric field spread over its surface. When a user makes contact with the sensor, it 'capacitively couples' to the electric field, drawing current to the user's finger. This technique is the most sensitive touch technology currently available, with a resolution of 1,024 by 1,024 touch points. It averages down the entire area of finger contact to a single point, giving users pixel-by-pixel control when touching the screen.

Touch screens are frequently at the mercy of the environment. Contaminants such as water, dirt, dust or grease can degrade the performance of infra-red and sound-wave touch screens. But the MicroTouch capacitative technology is impervious to these factors (I could take it on my next cattle drive), and, unlike pressure-sensing technologies, the GX140 is not affected by vibration or jostling.

The GX140 can be obtained immediately from MicroTouch at a single unit price of $695. For further info, contact MicroTouch Systems Inc, 55 Jonspin Road, Wilmington, MA 01887, USA ☎ 0101 508 694 9900, fax 0101 508 694 9980.

SEEING IS REMEMBERING

It must be a hardware kinda month: floptical disk technology is now available for your Amiga. The DMI Floptical Disk Drive provides one answer to the question of "How can I back up my hard drive?"

Each floptical disk looks and handles like a standard 3.5-inch floppy, but stores 20Mb of data at a cost of around $1 per meg! The Floptical Disk Drive requires a standard SCSI interface and is compatible with all Amiga applications, including *Ami-Back*, *Quarterback*, *CrossDOS* and *A-Max*.

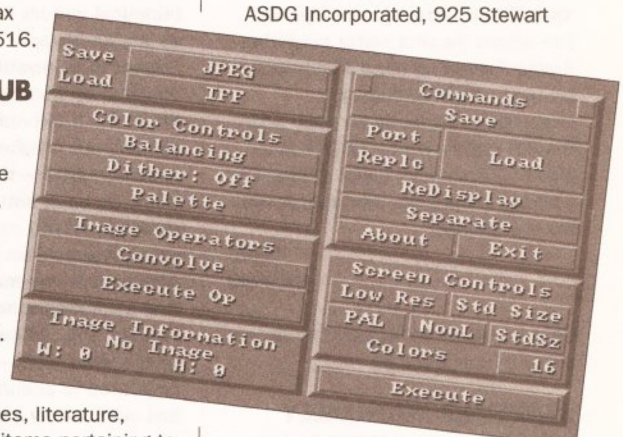
The DMI Floptical Disk Drive can be obtained from Digital Micronics Inc for $649. You can contact the company at Digital Micronics Inc, 2075 Corte del Nogal, Carlsbad, CA 92009, USA ☎ 0101 619 931 8554, fax 0101 619 931 8516.

JOIN THE CLUB

As part of ASDG's continuing commitment to the Amiga community, user groups can now receive free promotional material directly from the company. To receive this material, which includes video tapes, literature, badges and other items pertaining to ASDG's award-winning products, your Amiga group must be registered with the country's Commodore sales company. Officers of Amiga groups which have registered can then request to be put on ASDG's mailing list, and will receive new literature, videos and other materials as they become available.

And why is ASDG doing this? Well, quite apart from wanting user groups to share in the excitement generated by ASDG products, it turns out that the company President, Perry Kivolowitz, has been fairly active in user groups himself, and actually co-founded the second US Amiga user group. "Having been a user group president," Mr Kivolowitz said, "I know how passionately user group members want to be on the leading edge of Amiga developments. I also know how hard it is to get good quality materials for user group consumption."

Interested parties can contact ASDG Incorporated, 925 Stewart Street, Madison, WI 53713 ☎ 0101 608 273 6585.



User groups! ASDG would like to keep you right up to date about *Art Department Professional*

INTO THE SUNSET

Well, it's time for me to join Fuzzywig over at the saloon for a cool pint pot of ale (that's what he calls a cold brewski – he seems to speak a different language!). So it's whoopee-tie-yi-yea and so long pardners – Amiga Cowboy will be back soon!

Talking Shop

Welcome to the Amiga world's liveliest letters pages – where you get the chance to speak your mind. So join your host, the editor, Cliff Ramshaw for some more no-holds barred bantering. All you have to do to be included is send your missive to: 'Talking Shop', *Amiga Shopper*, 30 Monmouth St, Bath BA1 2BW. Get to it!...

TYPOGRAPHIC TALES

After reading through issue 22 of *Amiga Shopper* I've noticed more errors, or 'typos' as you call them, than usual. Perhaps this is because it was David Green's first day as Production Editor. I refer to the strange positioning of the picture of the AS Shareware Disk on page 13, amid two columns of articles with nothing whatsoever about the disk; the repetition of "to let" in the 'Question Of Royalty' on page 41. The advert for your sister magazine *Amiga Format* on page 132 was a cracker – "oprogramming labguage"; and lastly on page 151 the dot matrix printer LC200 is 9-pin not 24. I know: picky, picky. Try docking his pay per mistake: it will work wonders!

'Dave'
Hereford

Dock his pay? We've taken Mr Green out and had him shot.

STARTING MANUALLY

I have had my new A1200 for two weeks now after having used an A500 for the past two years. The machine is as good as the reviews promise but Commodore *must* learn to include manuals for all the software. The *A1200 Users Guide* and *Workbench 3.0 Manual* are just not enough – if I hadn't had any previous experience of the Amiga operating system I would be stumped. I must point out that I am a computer engineer by trade, and I must say that the Amiga's manuals are pathetic. I have moved to Workbench 3.0 straight from 1.3 and so have missed the 'learning curve' associated with WB2 (or was the documentation of that hopelessly inadequate as well?). At least with WB 1.3 there was a fairly technical *Enhancer Software* manual including all the available commands. As for ARexx – powerful it may be, but without documentation it is next to useless.

It shouldn't be left up to the technical writers in such magazines as *Amiga Shopper* and *Amiga Format* to de-mystify the software provided by Commodore. Imagine the furore if Microsoft started sending out Windows with no documentation – the PC community would be up in arms. However, since apparently nothing short of divine intervention can budge Commodore, we must all be grateful that such magazines go some way to filling the obvious need. So, keep up the good work – I am now dedicated to scouring your pages to find out how my machine works!

Paul Sims
Derbyshire

I couldn't agree more. Commodore's attitude seems to be that nobody will use their computers for anything other than using pre-written software. If you do want to go further, then you're forced to spend substantial amounts on manuals, though, to be fair, a line has to be drawn somewhere – it's completely impractical for Commodore to include complete documentation with every Amiga sold.

FALSE SCRIPTURES

I would like to voice my concerns about software houses that use script files to install their programs and other associated files onto a hard disk. In theory this is an excellent way to copy programs and files to the correct place on a hard disk with the minimum of user intervention. For a novice this may be the only way to do it.

However it can and does cause problems for Amiga users. At present there are Amiga users out there using Workbenches 1.2, 1.3, 1.3.2, 1.3.3, 2.0, 2.04, 2.05, 3.0 and the various upgrades in-between some of these.

Some of these installation programs copy files from the C, Devs, L and Libs directories of the program disk and overwrite the existing files in those directories already on the hard disk. In many cases later versions are supplied but, by the same token, earlier versions overwrite later versions and this is especially true for people with Workbench 2.04/5 or 3.0 when the new program files are for WB 1.3. Some files are put onto the hard disk when they are not even required as a later version is already written into Kickstart.

We have to remember that there is still a lot of software in the shops that was written before the A600, A1200 or A4000 were born.

I do not have an answer to the above, but believe that it needs some thought from somebody. All I know is that it has caused problems for myself and my A4000/040. Could it be that it is this that is partly responsible for some of the compatibility problems that occur?

Paul W Hazeltine
Tonbridge

This could well be the case. Commodore itself seems unable to get it right. How many owners of A600s discovered that they had the wrong version of the diskfont library on their Workbench disks and were unable to load *Fountain?*

A good stop-gap measure, which I've seen used by some recent public domain programs, is to include several different installation scripts. The user need only click on the script for his or her version of Workbench.

TO PRAISE, NOT TO BURY

I am writing to defend Commodore's policy. People still complain about the A600 being too much like the A500, and now claim the A1200's specification is not enough because it does not look as good as the Falcon's. The A600 is the saviour of A500 owners (with Workbench 2). Software will be written for the A600 that A500 owners can use. I think it is important to recognise that Commodore could have not bothered with the A600, gone straight to the A1200 and cut out the million or so A500 owners – as Kelly Sumner said, "there is no way we're going to allow our user base to suffer". Thank-you for the A600.

On the subject of the new Amigas' specification – it has always been stated that the Amiga will undergo constant evolution rather than revolution (witness the very large incompatibility problems with the Atari STE and Falcon). We can be assured that improved sound is on the way, otherwise the Paula chip would have been improved. It is also important to realise that the Amiga's future is assured. Because the A600 and 1200 have already sold in large numbers they are now standard machines. I do not think we can be sure of Atari's future.

Lastly, I know a lot of people have said this but it would be nice to see the new DSP arrive in a blaze of glory in the A2400 (which I think will be the true Falcon opponent).

Richard Grassam
Scarborough

An interesting assessment. I'm sure that Kelly will be pleased to read it.

YOU WIN

I bet you won't print this letter...

You're right.

BOUQUET OF BLESSINGS

I have an idea for occasional inclusion in future issues: all too often readers write in recounting grim experiences in dealing with suppliers. How about a 'bouquets' column instead, then perhaps the baddies might strive to be goodies. For starters, I offer you Gordon Harwood Computers. I found myself in the Alfreton area a couple of weeks back and went in on the off-chance that the shop might have a copy of *ProDraw* (my local dealer couldn't find a wholesaler who handled it). The people in the shop were unable to help but this didn't stop them from taking an obvious interest in what I get up to on my set-up, even to the extent of making it clear that I was welcome to call in any time – even if only to seek help and advice.

M David Eccleston
Tamworth

What a smashing idea. In view of which, I'll print this letter too...

YET MORE PRAISE

Firstly let me thank you and your staff for an excellent magazine. I am in my second year of subscribing to what I consider the best source of information about these new-fangled computers.

I am writing to you to praise from the rooftops Meedmore Cables of Liverpool. I have recently purchased a device from another of your advertisers and, on requesting some technical information, discovered that the company's helpline was non-existent. However, Meedmore not only supplied the cables I needed, but also gave answers to all my queries in terms that even I could understand.

I would also like to thank Mark Smiddy for his advice which enabled me to sort out the supplier of my equipment, which turned out to be incompatible with my A1200.

Keep up the good work.

WE Turnbull
Liverpool

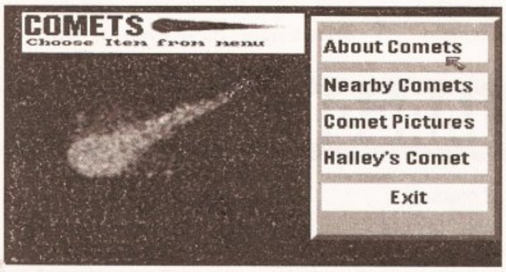
Now, we don't normally print letters praising us, but in this case, since the compliments are spread between us and Meedmore, we'll let it go!

THE WAY AHEAD

As a graphic designer hoping to use the Amiga to develop interactive multimedia I am encouraged by the A1200 and the recent disclosures concerning the AAA chip set. Some of your readers seem to take a narrow view of the future and overlook the fact that home computers are nearing the limits of human visual and audio perception. When we have 24-bit graphics and 16-bit sound as standard there is little more to go after besides faster processors. There will soon be several platforms with this capability and the only major advantage will be the processors they use and the operating systems they run. People will not choose between machines, but between systems such as WindowsNT, UNIX or PowerOS – and the processors they use, such as the DEC Alpha Chip, Intel's Pentam or the IBM/Motorola/Apple PowerPC. This is where the next battle will take place – judging from Intel's recent ad campaign it's hotting up already.

The hardware is good now and will get better, but we still need that piece of software which has the ability to create or dominate an industry. The Amiga's industry should be desktop video and desktop multimedia production. We should be discussing the nature and requirements of software for these fields and producing interactive multimedia titles of our own rather than looking over our shoulders. Interactive multimedia is not about CD – it is the communication of information, ideas, entertainment or argument, whether it's 600Mb or 600K. We must concentrate on a public domain bursting with titles before we can claim the industry as our own.

Valan Chan
West Midlands



Multimedia applications – should we be concentrating on what the Amiga does best?

I think you've made some very interesting and valid points, Valan. I hope you manage to encourage some exciting debate.

A COMPLAINT...

I've just read Jason Holborn's review of *Mastering Amiga AMOS* (from Bruce Smith Books) in the March issue, and thought you might be interested in my right to reply, being the author of the book.

The review is out and so that's the end of it as far as the public is concerned, but for the record I'd like to make a few points about the review as I thought it was a bit harsh. Naturally the review is Mr Holborn's personal view, and there's not much I can do to influence that, but I think he might just have missed the point of what the book is actually for, hence this little note.

In the meat of the review he says that the book doesn't go into enough detail for beginners. He gives an example that the book doesn't tell you how to open a HAM screen. It *does* in fact, on page 92. This is an extraordinary inaccuracy considering the accusations levelled at the book in the review about lack of attention to detail.

In stark contradiction to the comment about lack of depth he states later on that the chapter on mathematical functions and vectors went into too much depth and that it was boring. Naturally to a programmer who knows all about vectors and how to simulate the motion of a ping pong ball in five lines of code the retelling of such things in detail could seem a little boring, but to a beginner this is new and useful information.

I agree with the point that there isn't a mention of *every* command in the *AMOS* language in this book, but the book was never meant to be a complete manual for *AMOS,* and that was the intention clearly stated in the Preface.

The book was carefully pitched at a certain market, being aware as I was of the other books which were coming out at the same time. *Mastering Amiga AMOS* fits into this scheme of things. It isn't a manual for the program, none of the books on *AMOS* are and there's no need for them to be. *Mastering Amiga AMOS* is a companion volume to the manual for a very specific market, that is to say people who can't do it yet, those green programmers Jason talked about. It's not a book about learning Basic, or about *every* single aspect of the *AMOS* programming language. It's a book for beginners who already *have* a manual for the program, but need a bit of embellishment to help them get their heads around some of the basic concepts. It's for people who are just starting down the programming road and I think a fair review would have pointed this out in the same way that you would point out that a program is too elementary for the experienced user or too complex for a beginner.

If "the greenest AMOS programmers will probably find the subject matter somewhat obvious" then who are the people who write in to Jason's *AMOS Answers* column? In the same issue as the review, we have one person asking about addressing the parallel port, a query about *AMOS TOME*, a piece on *RAMOS*... all very elementary stuff, and all the same sort of topics which in the review on *my* book were beneath his contempt. In the same issue Jason covers the 'Spack' command for compressing IFF screens in his monthly beginner's guide. This topic is covered in my book too and in much the same way. Why is my way bad and his way good? Perhaps the 'ultimate book on *AMOS*' which he talks about is one that he has in preparation? I wonder.

In any event this is not the kind of off-base reporting I expect, especially from a magazine of *Amiga Shopper's* stature.

Phil South
Somerset

Jason Holborn writes: In the light of what you've said, Phil, I've taken another long, hard look at *Mastering Amiga AMOS* – and I'm afraid I still stand by every point raised within the original review.

Let's start with the coverage of HAM mode. I hardly think that the two sentences *Mastering Amiga AMOS* gives to the subject can be deemed sufficient coverage. If you think you can adequately explain such a complex screen mode in two lines, you're a better man than I am!

Other examples spring to mind. Take dual playfield displays, for example – although you did include a demo listing, there's virtually no explanation whatsoever of this very complex screen mode. If you feel that beginners would get too bogged down, then perhaps you shouldn't have mentioned dual playfield mode in the first place! Considering the book was 'carefully' aimed at beginners, it just leaves them in the dark time and time again.

The review was certainly not written in an attempt to ensure sales of a book that I am supposedly writing. If this was the case, surely I would also slam other *AMOS* books in a similar manner? As regular readers will know, I've whole-heartedly recommended publications such as Stephen Hill's *Amiga Game Maker's Manual* on several occasions. Sorry Phil, but I still stand by my review. AS

'I CAN LARF ABOUT IT NOW'

Have you learned a valuable lesson from the trials and tortures of experience or overcome some mind-boggling problem through incredible ingenuity or even sheer luck? Then let us know and win yourself a fiver into the bargain. Write to 'I can larf about it now', Amiga Shopper, 30 Monmouth St, Bath BA1 2BW.

FROZEN HORROR

I had recently been working on my database, and as I don't have a hard drive I copied my files to RAM for quicker access. After working for a time I started to browse through some of the files on the disk that I had in the drive and came across one named 'WB'. I didn't know what it was so, as I had a utilities program running that will load just about anything, I gave it a click. At this stage I was called away.

When I came back to the computer and moved the mouse to switch off the screen blanker, to my horror all I had was my Workbench screen. I moved the mouse all over the place but couldn't find its pointer. The clock at the top of the screen was not working and the date was six months behind. Then I happen to click the right mouse button and in a flash the clock and date were reset and I could see my database sitting in the background.

Six months ago I had been trying out a utility that saves snapshots of screens as IFF files. Yes, you've guessed it – I had opened a perfect copy of a Workbench screen.

I learned two things from this experience: save regularly to disk and title files more explicitly!

John W Baxter
Hull

CHIPS WITH EVERYTHING

Compared to the motor car, domestic cooker and many other consumer items that we take for granted these days, the home computer is still in its infancy. Little more than thirteen years ago, about the closest most of us ever got to a computer was a chunky pocket calculator. But in this short stretch of time home computers have advanced in leaps and bounds. Chunky black and white displays have changed to almost photographic full colour images, while the plaintive beeps and whistles that amazed early computer fans are thankfully heard no more.

However, all this progress has come at a price – more sophisticated computers means more sophisticated programs, which in turn make greater demands of the hardware. Back in the days when ZX81s and VIC-20s roamed the Earth, 5K was once considered an extravagantly huge amount of memory. Remember the old Commodore 64 TV adverts?

> ***"5K was once considered an extravagantly huge amount..."***

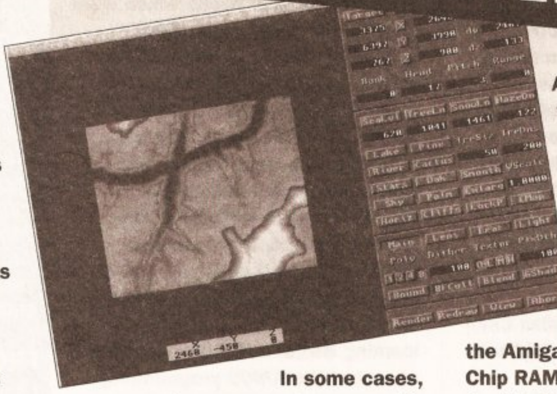
Commodore was so chuffed with its new machine's then-massive 64K RAM that the company went to great lengths to compare the C64's memory to that of an elephant (an elephant dressed in boxer shorts, to be more precise!). Then along came the Commodore 128 with a mighty 128K – while the 128 proved to be more of a dinosaur than an elephant, its development proved that the accent was definitely on more powerful computers with more and more memory.

RAISING THE STAKES

Even the Amiga started its life with very little memory – the basic A1000 came with just 256K, which was barely enough to run Workbench, let alone anything else. Since then, the continuing development of the Amiga's hardware and the arrival of advanced software such as *DPaint 4* has gradually forced Commodore to increase the amount of memory in a basic Amiga to a minimum of 1Mb (four times that of the original A1000!). With the release of the A1200, its faster processor and more powerful graphics chips, Commodore has upped the ante still further by fitting the machine with 2Mb. A few years back, that sort of memory capacity would have been considered colossally excessive!

But times change – these days even 2Mb isn't nearly enough if you use your Amiga seriously. Although a 2Mb machine will happily run virtually all games and quite a few serious applications, the increased burden imposed by those new 'AGA' screen modes can quickly eat up lots of RAM. Think about it – if you open up a 1280 by 512 screen in HAM-8 mode (which uses 8 bitplanes), it alone will swallow up over 650K of valuable memory. Run Workbench as well and that's almost a megabyte gone before you've even started.

> ***"...that's almost a megabyte gone before you've even started."***



In some cases, expansion memory is a necessity rather than a luxury. *Vista Pro 2* won't even run in less than 3Mb!

As any Amiga user worth their salt will tell you, the Amiga's memory is split into two main areas – Chip RAM and Fast RAM. The distinction arises because Chip RAM is very special – it's the only area of memory that can be accessed by the Amiga's custom chips. Without Chip RAM, Paula, Agnus and Denise (and their AGA counterparts) would be unable to bring you the scintillating sound effects and colourful graphics that have become the Amiga's trademark.

Virtually every program you run on your Amiga makes use of Chip RAM – if you run a game, for example, then all its graphics and sounds need to be stored in Chip RAM if they are to be accessible to the Amiga's custom chips. But it's not just 'entertainment' software that can cause problems. Programs which you might have expected to be rather less obvious memory guzzlers also need Chip RAM – when you run a 'serious' application such as a word processor or even a spreadsheet, Chip RAM will automatically be used to store the program's screen display. About the only programs that

JARGON BUSTERS • JARGON BUSTERS • JARGON BUSTERS

Auto config – A very clever system built into the Amiga's operating system that allows the machine to automatically recognise the presence of extra RAM.

Bit – The smallest measure of memory capacity is the bit. A bit can contain either a 0 or a 1. It stands for BInary digiT.

Byte – A byte consists of either 8 bits or 2 nybbles, depending upon how you look at it.

Chip RAM – Chip RAM is an area of memory inside the Amiga that is used by the Amiga's custom chips to hold graphics and sound data. If this data is held in any other part of the Amiga's RAM, the custom chips will not be able to access it. Most Amigas offer 1Mb of Chip RAM, but newer models offer double this, allowing you to produce bigger and more colourful pictures and longer sound samples.

DRAM – Dynamic RAM. DRAM chips are the most popular type of RAM chip used on the Amiga. Available in a number of different sizes ranging from 32K to 512K, DRAM chips provide a cheap and effective method of expanding your Amiga's memory.

Fast RAM – The opposite of Chip RAM is Fast RAM, an area of memory that is used exclusively by the Amiga's central processor. Because the custom chips don't have access to it, the processor is able to access it at full speed (hence the 'Fast' tag). It is in this area of memory where programs are stored.

Kilobyte – Expressed in 'K', a kilobyte is 1024 bytes.

Long word – 32 bits, 2 words, 4 bytes or 8 nybbles.

Megabyte – A megabyte (Mb) is 1024 kilobytes.

Nanosecond – The speed of memory chips is measured in nanoseconds. As a general rule, the lower the nanosecond rating, the faster the chip.

Nybble – Next up on the memory capacity scale from the 'bit' is the nybble. It consists of 4 bits.

RAM – Random Access Memory. RAM acts as a sort of workspace that your computer uses to store programs and data on a temporary basis.

ROM – Read Only Memory. Inside your Amiga is a ROM chip that contains the Amiga's operating system. As its name suggests, ROM memory can only be read, not written to.

SIMM – An acronym for 'Single In-line Memory Module'. SIMM chips are becoming increasingly popular because of their ease of fitting and relatively low price. You don't buy SIMM chips individually – because SIMM chips are surface mounted, they're sold in groups of eight on a PCB board. This then forms what is commonly known as a 'SIMM module'.

Slow RAM – Also known as 'Slow Fast RAM', this is an area of memory populated by A500 RAM expansions that fit to the trapdoor connector.

Word – 16 bits, 4 nybbles or 2 bytes. A 16-bit processor such as the Amiga's 68000 is capable of reading whole word values.

ZIP – Short for 'Zig-Zag In-line Package'. ZIP chips are simply higher capacity DRAM chips except for the fact that they are a different shape. Instead of having a line of pin connectors along each side, ZIP chips stand one edge and have all their connectors along one side.

Total recall

If there's one thing an Amiga always seems to need, it's more memory. Jason Holborn explains what you should be looking for in a new RAM expansion

don't require Chip RAM are CLI-based utilities, but even then the Shell window from which they are run must be stored somewhere in Chip RAM for Denise to be able to redraw the screen display.

BUILT-IN LIMITS

Early Amigas allowed a maximum of 512K of Chip RAM. This was OK for games and less memory-intensive programs, but these days 1 or even 2Mb of Chip RAM is pretty much standard. The new A1200, for example, comes complete with a full 2Mb of Chip RAM. The A600 and A500 Plus machines can also address 2Mb of Chip memory, but an additional trapdoor expansion is required. Unfortunately for A2000 and A1500 owners, Chip RAM on those machines is normally restricted to a maximum of just 1Mb, although they too can be persuaded to recognise 2Mb of Chip RAM when fitted with a board such as the Pro Agnus from WTS Electronics.

Multitasking can be a wonderful thing, but it's also the fastest way to fill up Chip RAM. Because each and every program that you run eats up Chip RAM, the more programs you run, the faster Chip RAM is used up. Attempt to run programs that open colourful high resolution screens or play sampled sounds and you'll find that your Chip RAM gets used up faster than your monthly pay cheque. Even an Amiga A600 with the standard ECS chip set can get through memory quickly if you try to run memory guzzling applications such as *ProPage* or *Imagine*.

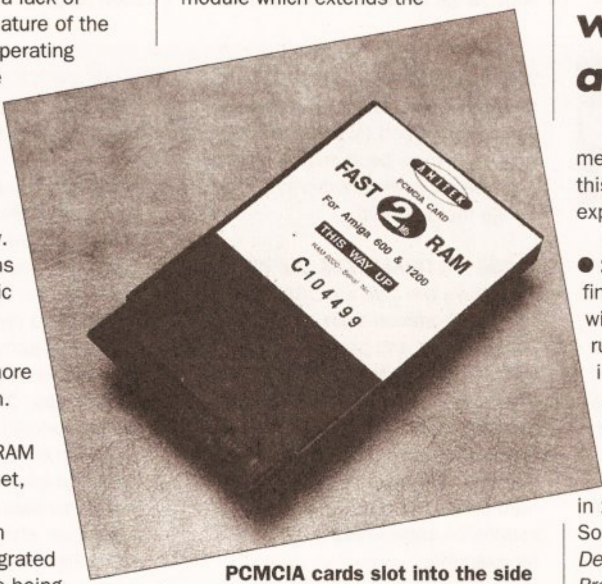
Most 'ordinary' computers aren't particularly plagued by a lack of memory, but the very nature of the Amiga's multitasking operating system means that the RAM requirements of even the simplest of programs can be compounded when several tasks are running simultaneously. Although most programs will multitask on a basic 1Mb Amiga, you can achieve real power computing by adding more memory to your system.

For example, with several megabytes of RAM under your Amiga bonnet, several high level applications can be run together and even integrated through ARexx. Imagine being able to run *ProPage*, *Art Department Pro* and *ProDraw*, together with the ability to exchange files through ARexx without ever having to swap between them. ARexx on an expanded machine really does become a very powerful beast – *ProPage*, for example, can completely control *ADPro* through ARexx, extending its image processing abilities immeasurably.

MEMORY MASTER

Of course the solution to all this lies in a RAM expansion, a plug-in module which extends the Amiga's memory to allow bigger and more sophisticated tasks to be performed. Most of us realise that a RAM expansion would be beneficial, but the same old question still pops up: how much memory do I need? In computing circles, this is more or less the same as asking: how long is a piece of string? Put simply, the amount of memory that you add to your Amiga will directly affect the performance of your machine – the more you add, the more you can do. Even if you add something like 4Mb to your system, you can bet that there will come a day when you'll wish you had more.

Of course the other factor you'll have to take into account will be the price. So, to help you make that important buying decision, here's a rough guide to the performance that you'll get from the full range of memory capacities. Note that these figures all include 1Mb of system memory, which means that '1Mb' on this chart is equivalent to zero expansion RAM.



PCMCIA cards slot into the side of your Amiga – a quick and relatively cheap method of enlarging the memory of an A600 or A1200

● **1Mb:** Virtually all games will run fine and most serious applications will run when no other tasks are running. But virtually all memory-intensive graphics and sound programs will be severally held back – *DPaint,* for example, will get decidedly shirty if you attempt to use the 'spare' screen when in 16-colour high resolution mode. Some programs, notably *Art Department Professional* and *ProPage 4*, will not even load.

● **2Mb:** Programs such as *Deluxe Paint 4* (the 'AGA' version) will run comfortably, but animation will still be rather limited. Reliable single tasking also becomes possible. Although many heavyweight packages will load OK, most will be severely restricted.

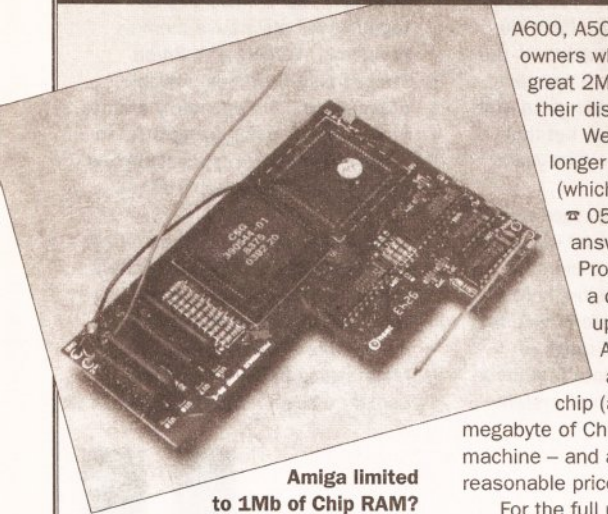
● **4Mb:** Almost all serious applications will load and run satisfactorily, though trying to multitask two or more of them together will still cause memory problems. Working with 24-bit images also becomes possible, although you'll undoubtedly start to feel the pinch when using them in heavyweight image processing and desktop publishing applications.

● **6Mb:** As any truly serious Amiga user will tell you, 6Mb is definitely the recommended minimum if you want to get an idea of what the Amiga is really capable of. Multitasking becomes genuinely useful as several related applications can be run concurrently, allowing you to share data between them.

● **9Mb:** For the ultimate in Amiga computing, 9Mb is the sort of memory capacity that dreams are made of – and the most you can usually fit to a standard machine. Multitasking several applications is easy even when working on sound samples and complex graphics simultaneously. In particular, ray tracing and solid modelling programs become very usable.

"9Mb is the sort of memory capacity that dreams are made of"

ENHANCING AGNUS



Amiga limited to 1Mb of Chip RAM? Now you can double your custom chip memory with the Pro Agnus

Do you find your A500 or A1500 regularly running out of Chip RAM? Do you look on enviously at all those A600, A500 Plus and A1200 owners who have a whacking great 2Mb of Chip RAM at their disposal?

Well, you need drool no longer – WTS Electronics (which can be reached on ☎ 0582 491949) has the answer in the form of the Pro Agnus card. This is a daughterboard upgrade for the A500, A1500 or A2000 that adds a 2Mb Agnus chip (and an extra megabyte of Chip RAM!) to your machine – and all for the very reasonable price of just £139.

For the full run-down on installing and using the Pro Agnus board, you should turn to page 60 of this very issue, where you'll find Gary Whiteley reviewing it as part of this month's *Video* column.

THAT BIT BETTER...

With the advent of true 32-bit Amigas such as the A4000 and the new A1200, not to mention the increasing popularity of processor accelerators, there's an extra consideration to be made when buying a RAM expansion for your machine. Up until the A1200 and A4000 were released, all Amigas were '16-bit' – in other words, they handled all data in chunks of two bytes. With 32-bit processors now the norm, the 16-bit RAM chips used in conventional RAM expansions no longer make the grade. Although they will work with 32-bit Amigas, their presence produces a 'bottleneck' that will slow even the fastest processor accelerator down to a veritable crawl.

If you want your A1200, A4000 or indeed any Amiga fitted with a processor accelerator to run at full pelt, then you must buy 32-bit RAM chips. Now, expanding the memory of an A4000 is very easy indeed because it comes as standard with slots to accept industry standard 32-bit SIMM modules.

However, expanding the A1200 with 32-bit RAM is slightly more complicated because a separate 32-bit RAM card must be bought. Several companies have announced A1200 RAM expansions, but – to date – only a single manufacturer has been able to deliver the goods. And even then, expanding an A1200 is not cheap.

> *"a bottleneck that will slow even the fastest processor down to a crawl"*

CREDIT WHERE IT'S DUE

Another expansion option available to A600 and A1200 owners is a credit card-sized PCMCIA memory expansion. For any of you who are still wondering what that little slot on the left-hand side of your machine does, PCMCIA is a wonderful idea that aims to make memory cards and other expansion devices standard across a whole range of different machines (which includes other makes and models of computers– not just Amigas!).

PCMCIA, which stands for 'Personal Computer Memory Card International Association', is a brave attempt at a new expansion standard which has been adopted across a wide range of personal computers. Although designed specifically for RAM expansions, PCMCIA is also capable of a lot more – there are already rumours that several leading Amiga manufacturers are working on PCMCIA-based hard drives, sound samplers and modems.

GET SMART

Existing PCMCIA memory cards come in two main forms – 'D-RAM' cards and 'S-RAM' cards. D-RAM cards are by far the most common, simply because there is a greater demand for them. A D-RAM card is, in fact, just another form of memory expansion and they are available in either 2 or 4Mb sizes. A1200 users should be careful though – while a PCMCIA expansion is perfectly suited to the A600, it's not ideal for the A1200 simply because all PCMCIA expansions are 16-bit memory only. As the A1200 is a true 32-bit machine, connecting a PCMCIA memory card to your machine will not allow it to run at its full speed.

The other form of PCMCIA memory expansion is the S-RAM card or – to give it a better name – the 'smart card'. Smart cards aren't strictly RAM expansions because the Amiga treats them as a storage device like a hard disk (device CC0:). However, they do have the advantage of being non-volatile – that is, they retain their contents even when your Amiga is switched off, thanks to a battery that keeps the RAM chips charged. We won't be covering S-RAM cards in this feature, but it is still important that you are aware of the differences between them and D-RAM cards.

CHIP SHOP

To the uninitiated, a RAM chip may be just be a RAM chip, but it's important that you realise what different types of memory circuit are available if you are to make the right buying decision. This becomes particularly important if you buy a RAM expansion board that has space for further expansion.

Say, for example, you buy an 8Mb board which is populated to 2Mb. If you decide at a later date that you want to expand it further, you need to know the exact type of chip that is required. RAM expansions come in different sizes, so they cannot be mixed. The speed of a RAM chip is important too – the lower the nanosecond rating, the faster the chip. The speed rating of the chips you require will be stated in the RAM expansion's manual, so do check this before buying.

The pricing of RAM chips is also very important. Although a particular RAM expansion may seem an attractive proposition when you first buy it, it could all go horribly wrong if you discover later on that your new acquisition will cost an arm and a leg to populate. Here's a quick rundown of the most commonly used chip types on the market and their approximate prices. It's important to remember that RAM chip prices are still very volatile, so don't be surprised if prices suddenly drop or – worst still – shoot up.

● **256 x 1 DRAM (cheap!):** Up until a couple of years back, the 256 x 1 DRAM (Dynamic RAM) chip definitely ruled the roost. Although very cheap, their limited capacity (32K) meant that RAM expansion boards had to be huge, just because you needed sixteen of these for every 512K of memory. Most early A500 trapdoor expansions used this chip, but these days they have become less popular – you won't even see them on the Amiga motherboard.

● **256 x 4 DRAM (£55 per Mb):** Nowadays the 256 x 4 DRAM chip is far more common than its predecessor, and can be found in both the Amiga itself and most RAM expansions. Each chip offers 128K of memory, so only 4 of them are needed for each 512K bank. You'll find this chip used in quite a few hard drives that offer memory expansion capabilities – the A590, for example.

● **ZIP (£40):** These 256K x 4 chips are just starting to come into common usage on larger expansions thanks to their high capacity. Each chip offers 128K of storage. A larger capacity 1Mb x 4 ZIP is also available enabling large RAM capacities to be fitted into a minimal amount of space. ZIP chips are used extensively within the A3000 and various third-party RAM expansions such as the SupraRAM 500RX.

● **SIMM (£50 per 1Mb x 8 Module):** As far as memory chips are concerned, SIMMs (Single In-line Memory Modules) are definitely where it's at. Not only are they used as standard on the Amiga 4000, but many third-party large capacity RAM expansions use them in preference to ZIP chips. One big advantage of SIMM modules is their ease of fitting – instead of having to carefully fit each and every chip in their holders, SIMM modules have several chips on a tiny card which simply slots into place. Plus, the chips in a SIMM module are surface mounted, so they are therefore a lot more reliable than normal RAM chips.

SIMMs are available in a variety of different sizes, ranging from the basic 1 Mb x 8 SIMM (giving 1Mb of storage) to the high capacity 4 Mb x 9 SIMM (4Mb). Both types of SIMM module are used extensively by Commodore and Nexus.

Buying an *AMIGA* was your first great decision.

Now go even further: these Amiga peripherals and hardware products will maximise the versatility, speed and storage capabilities that your Amiga promises.

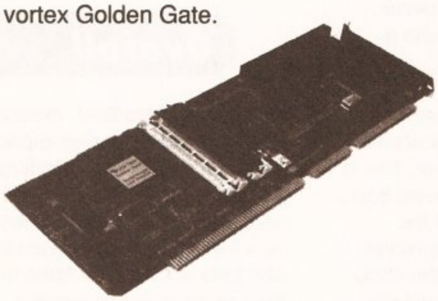
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VECTOR



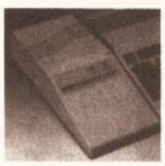
- Socketted 68EC030
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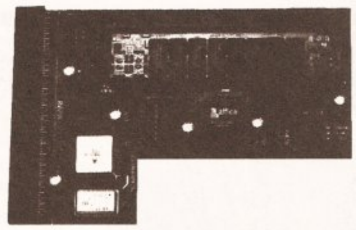


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A1200 EXPANSION

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- Expandable to 8MB of 32bit RAM

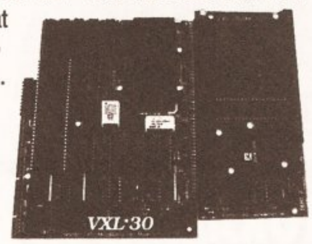
MBX1200 starting from £145.95

ACCELERATOR

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- 68882 socket on board

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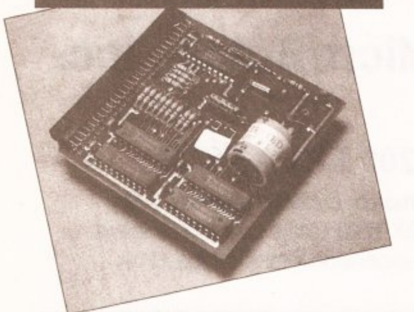
A500

You too could push your A500's memory to its limits – if you play your cards right!

Commodore may have pulled the plug on the A500, but third-party hardware vendors continue to cater for the machine with a vast array of memory add-ons. A500 RAM expansions come in two main flavours – trapdoor expansions and external bus connector expansions. All trapdoor expansions are what are known as 'Slow RAM' expansions. In other words, any board fitted to the A500 via the trapdoor expansion will not offer the same memory speed performance obtainable from true Fast RAM cards fitted to the bus connector. This speed difference isn't all that noticeable, though – Fast RAM cards run about 15% faster.

Quite a few manufacturers now offer large capacity RAM expansions that hold as much as 4Mb on a single trapdoor expansion, but you should be aware that these boards require you to fit 'jump' connectors inside the Amiga which will inevitably void your warranty. But if your machine is past its warranty date, these may well be worth considering – although it is still recommended that the boards are fitted by an experienced engineer.

PC501



TRAPDOOR EXPANSIONS

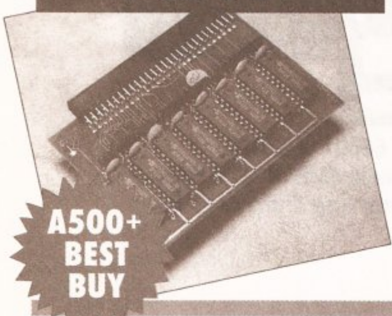
£29.95 Power Computing
☎ 0234 843388

Surely there are very few users of the original 1.2 and 1.3-based A500s who haven't already upgraded their machines from the basic 512K to 1Mb of RAM? If you're one of those poor unfortunates still living in the stone age, then Power Computing's board could be for you. In true Commodore A501 fashion, the PC 501 board connects to the Amiga via the trapdoor port on the machine's underside. Unlike the original A501, Power's board uses the now obligatory 256K x 4 DRAMs which help to keep the board's size and power drain down to a minimum.

Unlike most A500 512K RAM expansions, the PC501 doesn't have a hardware-based disable switch. Instead, you are supplied with a software-based switch program which stays resident even after resetting your A500. If you want to get all that extra memory back again, you'll need to turn your A500 off for a couple of seconds. The PC501 also comes with a battery-backed clock facility, so it's a pretty complete little board for the price. In all, the PC501 is a well designed little expansion that offers good value for money.

Overall ••••○

PC501+



£35.95 Power Computing
☎ 0234 843388

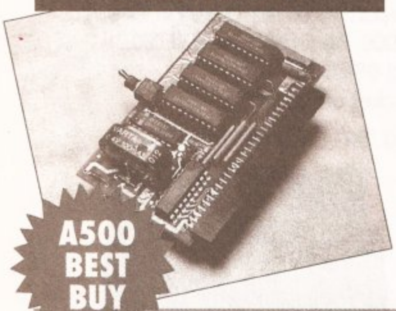
Power Computing has also extended the PC501 to cater for A500 Plus owners, coming up with a brand-new product in the shape of the PC501+. For just an extra £6, the PC501+ provides double the capacity of its little brother, the PC501.

Once again, Power has opted for the 256 x 4 DRAM. Surprisingly (considering that it uses four extra RAM chips), the PC501+ is actually smaller than its predecessor. This is partly thanks to a much neater board design and the absence of the battery-backed clock facility (which would be unnecessary as the A500 Plus has this built in as standard). It's a very, very neat little board that actually looks quite attractive too (if such a thing is possible!).

When connected to an A500 Plus, the PC501+ provides an extra megabyte of Chip RAM, making heavily graphic-intensive applications such as *ProPage* and *DPaint* run that bit better. However, the PC501+ really comes into its own when used on a machine fitted with Fast RAM – with 2Mb of Chip RAM fitted to your Plus, multitasking becomes a veritable joy. If you've got an A500 Plus, then this little beauty should be at the top of your shopping list.

Overall •••••

ADD501



£21.00 Ashcom
☎ 0530 411485

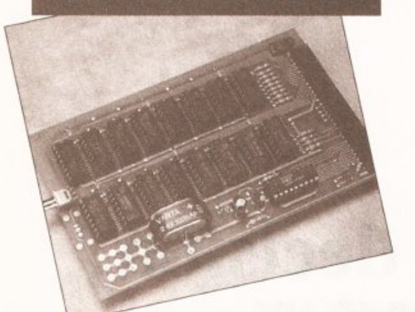
Ashcom's answer to the PC501s of this world is the ADD501, a A500 half-megabyte RAM expansion card that doubles the machine's system memory to a full megabyte. Virtually identical in specification, Ashcom's card is half the size of the PC501. It too offers a low-drain 4-chip design complete with a battery-backed clock, but this time the RAM disable function is hardware-based.

I'm not quite convinced by trapdoor RAM switches – if you need to disable the ADD501, you'll have to switch off and disconnect all the cables attached to the machine in order to reach it. I'm not criticising the ADD501 for this – locating the trapdoor connector on the underside of the machine was a stupid idea in the first place! That said, I think Ashcom should have thought about taking the same software-based approach as Power.

Gripes aside, the Ashcom ADD501 is a no-nonsense half-megabyte RAM expansion that gets the job done. If you can do without the battery-backed clock, it's available for just £19, which is a hefty £11 cheaper than Power's card. Even the clock card is still £9 cheaper! Highly recommended.

Overall •••••

PRORAM A501



£19.00 WTS Electronics
☎ 0582 491949

It may not look particularly stunning, but WTS have done very nicely thank-you out of their ProRAM A501 card for the A500.

Unlike the rest of the half-megabyte RAM cards on test here, the expansion board from WTS Electronics uses the rather aged 256k x 1 DRAM chips that Commodore used in the original A500 machines. Because of this, the board is quite large in order to accommodate its 16 RAM chips.

So, the technology used in this expansion may not be particularly 'leading edge' stuff, but – on the other hand – no-one can doubt that the card does its job admirably.

As you'd expect, the ProRAM card also adds a battery-backed clock facility using the same Oki clock chip used in virtually all Amiga RAM expansions. A RAM disable switch is also fitted as standard, but it too suffers from the inconvenient location that plagues all hardware-based switches.

Taking its low price into account, ProRAM has to be viewed as nothing short of a real bargain. To think that A500 half-megabyte RAM expansions cost over £100 little more than a couple of years back!

Overall ••••○

BUS PORT EXPANSIONS

ADDAX

£125-285 Ashcom
☎ 0530 411485

A trapdoor expansion can only take an A500 so far – you need a bus connector expansion if you want to go beyond the 2Mb limit.

One of the cheapest 8Mb bus connector RAM expansions on the market is Ashcom's excellent AddAx board. Unlike some expansions, the AddAx is very small and unobtrusive, blending beautifully into the curves of the A500. It also offers a pass-through connector, so you can still use your hard disk with it connected.

AddAx manages to squeeze into such a tiny box thanks to its use of high-capacity, low-drain ZIP chips. These also allow the standard Amiga power supply to power the unit, so no external power supply unit is required. But you may start to encounter problems if other expansion hardware is connected, so a higher rated power supply may still be a worthwhile investment. Even if you buy the 2Mb version (£125), it can be expanded at a later date simply by fitting your own ZIP chips.

Following in the footsteps of Ashcom's 512K expansion, the AddAx board really is something special. It's well designed, cheap and it works well – what more could you ask for?



Overall ●●●●○

POWER 8MB BOARD

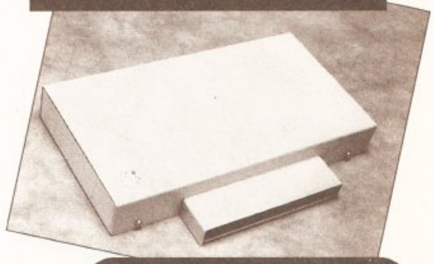
£109-289 Power Computing
☎ 0234 843388

A500 BEST BUY

If you're looking for a RAM expansion that's well designed and built like a tank, then look no further. Using the same high capacity 1Mb x 4 ZIP chips as the Ashcom board, the Power board can be expanded from the basic 2Mb to a full 8Mb for a similar price. Although the board is initially cheaper to buy than the AddAx, the price rises above that of the AddAx if you buy the version fitted with a full 8Mb of RAM.

Like the AddAx, the Power board also comes as standard with a bus connector pass-through, though its flat design looks rather odd when wedged between a hard disk and the A500. Power assures me that a new slimline version that looks more like the AddAx will be available soon at no extra cost. Manufactured from the same sturdy cream-coloured metal, this new slimline board gets my vote for sheer strength alone.

There's very little to separate the Power board from AddAx, but I must admit that I would go for the Power board due to its better quality of manufacture and initially cheaper price tag. If you're in the market for a high capacity RAM expansion, then Power Computing's 8Mb board is very good indeed.



Overall ●●●●●

A600

Who was it who said that the A600 was underpowered? Using its PCMCIA and trapdoor slot with these RAM add-ons, you can realise the full potential of your machine!

With the demise of the A500, some still consider the A600 as something of a poor alternative – just take a look back at our *Talking Shop* pages of a few months ago if you need to remind yourself of the mixed reception the new spec received.

Although large capacity RAM expansions for the machine are still few and far between, it's still possible to expand an A600 all the way up to an impressive 6Mb of RAM via the machine's PCMCIA and trapdoor slots.

Like the A500 Plus, the A600 can also handle up to 2Mb of Chip RAM, so a 1Mb trapdoor expansion should be right at the top of your shopping list even if you think you'll need more than just a basic 2Mb on board.

TRAPDOOR EXPANSIONS

AX601

£44.95 Ashcom
☎ 0530 411485

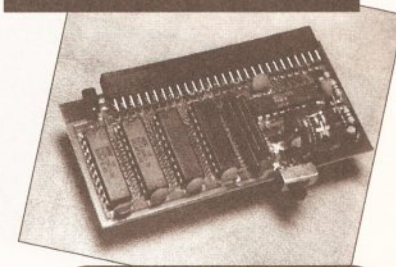
Ashcom has stormed the A600 market with a vengeance with the launch of the AX601, an offering for A600 owners who need that bit more Chip RAM.

The AX601 may not look particularly high-tech, but its specification is second to none. Once again, it offers a full megabyte of extra Chip RAM and a battery-backed clock, something that Commodore very stupidly left out of the basic A600.

The board that we were sent seemed to have seen better days, but the overall quality of design and manufacture was pretty good. Having said that, it did seem that whoever put ours together had been perhaps a little over-generous with the solder!

Unlike Power Computing's PC601 (reviewed below), the AX601 does offer a very handy RAM disable switch. But, once again, you'll need to switch off your machine, pull out all the cables and flick your machine over onto its back to reach it.

The only thing that really lets the AX601 down is its price – at £7 more than its main rival, the AX601 is quite expensive. Personally, I'd rather buy a ProRAM card and pocket the extra seven quid.



Overall ●●●●○

AMITEK 600

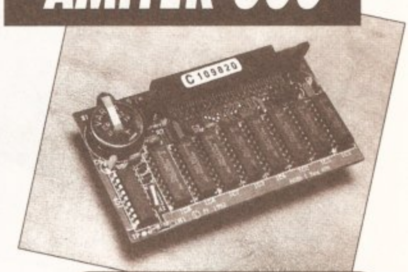
£44.95 Silica Systems
☎ 081 309 1111

I would hazard a guess that Silica Systems must be well and truly chuffed with the AmiTek range of A600 products. Not only was AmiTek one of the first companies to produce a PCMCIA credit-card memory expansion for the machine (as discussed in the introduction to this round-up), but it just happens to do a very nice line in A600 trapdoor expansions too.

The AmiTek 600 card is a neat little board that looks and performs in a very similar manner to Power Computing's PC601 (reviewed just over the page). Indeed, if it weren't for the slightly greener shade of PCB, one could be forgiven for mistaking the AmiTek card for a Power Computing product.

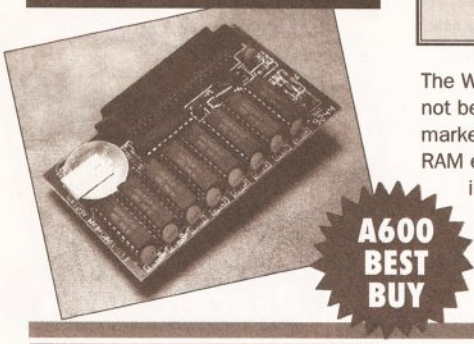
Like the rest of the competition, the AmiTek card uses the same 256K x 4 DRAM integrated circuits and also offers a battery backed-clock. And once again, there's no RAM disable switch which I personally find darned annoying. Come on guys! If A500 owners can have disable switches, why can't A600 owners? Even one of those irritating under-the-computer trapdoor ones would be something!

The lack of a disable option wouldn't be so bad if the A500 Plus expansions weren't so much cheaper than their A600 equivalents. Oh well, I guess I'm just hard to please!



Overall ●●●●○

PRORAM A601



£38.00 WTS Electronics ☎ 0582 491949

The WTS A500 RAM expansion may not be the most exciting board on the market, but in my opinion its A600 RAM expansion is a far more impressive beast.

Based around the now obligatory 256K x 4 DRAMs used in virtually every A500 and A600 trapdoor expansion under the sun, the ProRAM A601 boasts the same quality of design and manufacture as its main rival, Power Computing's PC601.

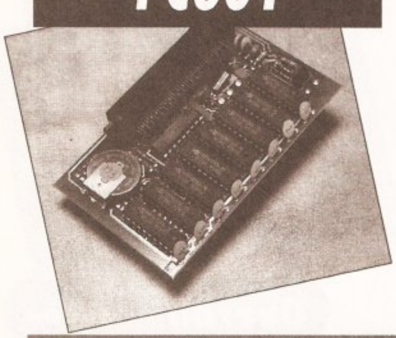
One big advantage of the ProRAM card over Power's card is that its RAM chips aren't soldered directly onto the board, so – in the unlikely event that a RAM chip should give up the ghost the very minute that your guarantee expires – individual RAM chips can easily be replaced without you having to resort to the dreaded soldering iron.

Once again, the ProRAM card offers a battery-backed clock, although it too doesn't offer any form of RAM disable option, something that I feel both Power Computing and WTS should look into – if only to protect A600 owners from the taunts of those with A500s!

But at £2 cheaper than the PC601, my money's definitely on this little beauty. If you own a 1Mb A600, then get this board.

Overall ●●●●●

PC601



£39.95 Power Computing ☎ 0234 843388

Power Computing does it again! Not content with having already snapped up some pretty mean ratings for their A500 RAM expansions, the lads (and lasses!) at Power Computing bring you the PC601, a spiffing little 1Mb RAM expansion that you can pop straight into your A600 for a very reasonable £40.

Using the same 256K x 4 DRAM chips as its A500 counterpart, the PC601 is a neat little board that fits perfectly snugly onto the A600's trapdoor connector.

As you'd expect, it too offers a battery-backed clock facility, although sadly lacking from the board is any form of RAM disable option. Well, fair enough, I suppose it could be argued that 2Mb of Chip RAM is unlikely to trip up very much software, but it still would have been nice to have had the option available – just in case your favourite game or PD title falls flat on its face when it runs into something it isn't quite expecting.

Gripes aside though, the PC601 is a elegant little board that is well worth investigating. It may not be the cheapest option available, but then who's going to worry about the odd pound or two when a board's as well designed as this?

Overall ●●●●●

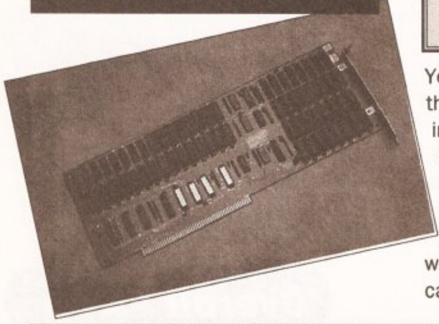
A1500/2000

These high-specification Amigas are by far the easiest to expand – thanks to the mark of 'Zorro'

If 'expandability' is all-important to you, then the A1500 and A2000 Amigas are the perfect machines to own. Due to their modular design and more than generous expansion space, they can be expanded above and beyond their basic 1Mb specification with ease.

What's more, both machines are capable of taking extra RAM internally via expansion cards that connect to the machines using their Zorro II slots. Many cards come populated with a minimum of 2Mb of RAM – more can easily be added by purchasing more chips. Most A1500 and A2000 RAM boards use either high capacity 1Mb x 4 DRAMs or 1Mb x 8 SIMM modules, which can both be bought reasonably cheaply.

A2056



£149 Commodore UK ☎ 0628 770088

You might expect great things from the company that gave us the Amiga in the first place, but Commodore has never been renowned for its peripherals! The A2058 isn't a bad little board, but it is starting to show its age, especially compared with the sort of 'do it all' combo-cards that have made GVP very rich.

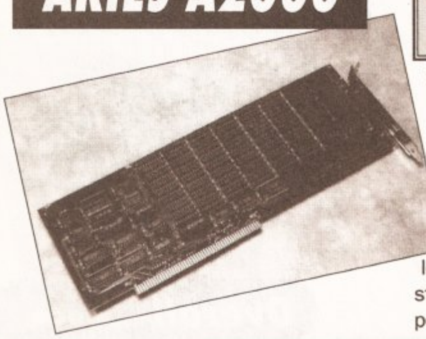
Specification-wise, the A2058 is a no-nonsense product that gets the job done but little else. Like the Aries 2000 card reviewed below, the A2058 comes as standard with 2Mb of RAM ready to plug in and go.

Fitting the card is pretty straightforward – open up your Amiga 1500 or 2000, locate a spare Zorro slot and drop the card in. It really is that simple. Then, thanks to the wonders of the Amiga's Auto-Config hardware, the Amiga automatically takes advantage of the extra Fast RAM provided by the card.

The A2058 is a full-length card that stretches all the way across your machine – take it from me, this is hardly VLSI (Very Large Scale Integration)! Extra memory can be added in 2Mb increments using standard 1 Mb x 1 DRAMs, so the board can be upgraded for a fairly reasonable price (about £50 per Mb).

Overall ●●●●

ARIES A2000



£129-249 Power Computing ☎ 0234 843388

Unlike most of Power Computing's fine range of expansions, this offering for A1500 owners is actually produced by Integrated Memory Products, an American hardware manufacturer.

The Aries 2000 is a full-length Zorro II board that comes as standard with 2Mb of RAM (or fully populated to 8Mb for £249). Extra memory (up to 8Mb) can be added in 2Mb increments using commonly available 1Mb x 1 DRAM chips rated at a rather slow 120 nanoseconds. Each time extra banks of RAM are added, jumpers on the board must be set to allow the Amiga to recognise the extra memory.

In many ways, the Aries board is very similar to Commodore's own A2088. Indeed, it offers the same expansion possibilities and even uses the same RAM chips. However, one thing that can be said about the Aries board is that its quality of manufacture is certainly better than Commodore's offering.

The price also makes it a very attractive proposition if you already own a hard disk and therefore don't require the extra bits and pieces offered by GVP's kit. To sum up, the Aries card is a nice no-frills add-on that gets the job done for a sensible price. Once again, Power Computing sets the standard!

Overall ●●●●●

£149 Silica Systems
☎ 081 309 1111

With GVP dominating virtually every area of Amiga expansion, you'd be a fool not to check out the options on offer down at Great Valley Products before handing over your hard-earned cash. GVP's main A1500 memory expansion is the HD8+, which does a whole lot more besides increasing your RAM.

A1500 BEST BUY

For starters, if you don't already own a hard disk controller, then the HD8+ can also be used to drive any standard SCSI hard disk. A hard drive can be mounted directly onto the card, leaving those vital drive bays clear for further expansion. And, because the HD8+ offers all this on a single card, a further Zorro slot is left free by not having to fit a separate SCSI controller.

Although the basic HD8+ doesn't come with any RAM as standard (this should be taken into consideration when comparing it with other products), it can handle up to 8Mb of Fast RAM using standard 1Mb x 8 SIMM modules at a cost of around £50 per Module (each module offers 1Mb). Although the GVP card is initially expensive, you get what you pay for. If you don't already own a hard disk, then the GVP HD8+ is the only choice – in the long run, you'll save yourself a lot of money!

GVP HD8+

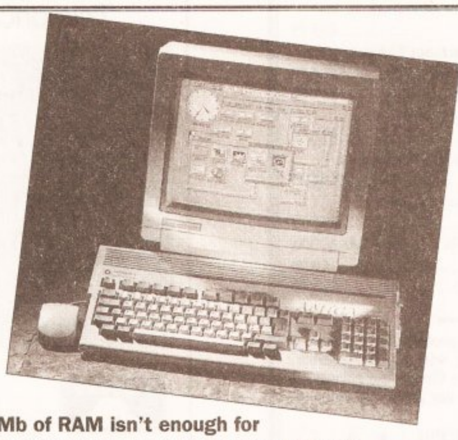


Overall ●●●●●

1200 OPTIONS

With its massive 2Mb of memory as standard, the A1200 certainly isn't starved for RAM. But try to use it for any form of serious work, and you'll soon come to realise that a RAM expansion is definitely required.

We had hoped to bring all you A1200 owners a round-up of the current state of the art in A1200 expansions, but – time being our worst enemy – all the A1200 boards that we chased up either failed to arrive in time or simply weren't ready for review. It seems that the A1200 is such a new machine that hardware vendors are still hard at work on the next generation of RAM expansions.



2Mb of RAM isn't enough for what you want to do with your A1200? Fortunately there's plenty of expansion options

MORE THAN JUST A MEMORY

Several well-known RAM expansion manufacturers were able to confirm that 32-bit A1200 RAM expansions are waiting in the wings. What has become apparent is that very few of the boards that will be released over the coming months are just RAM expansions – nearly all the A1200 RAM expansions that we were told about offered some form of extra expansion capability.

Take GVP's new range of A1200 expansions, for example. GVP is currently working on two new expansion boards for the A1200 – an A1230 and the 'Fang' board. The A1230 not only provides space for up to 32Mb (yes, 32!) of 32-bit RAM, but it also comes as standard with a 40 MHz 68030 processor accelerator with provision for a maths co-processor. GVP has based the A1230 around its existing A530 board for the A500, although no hard drive interface is included. How much for all this power? How does £399 with 4Mb of 32-bit RAM installed grab you?

On the other hand, the 'Fang' board offers up to 8Mb of 32-bit RAM, a SCSI hard drive interface (let's face it, the A1200 needs it!) and space for fitting a maths co-processor. Once again, GVP is looking at a price of around £399 for this little bundle of fun. For more details, contact Silica Systems on ☎ 081 309 1111.

SPEED FIEND

But if you just can't wait for GVP's expansion boards, then you may be interested in the new MBX1200 board from MicroBotics. The MBX1200 connects to the A1200 internally via the machine's 150-pin edge connector and offers up to 8Mb of 32-bit expansion using commonly available SIMM modules.

It also has space for fitting either a 68881 or 68882 maths co-processor, speeding up math intensive applications by a factor of eight. Fitted with a 14.2 MHz 68881 and no expansion RAM, the MBX1200 retails for around £120 while a faster 68882 board can be picked up for just £60 more. Contact Calculus on ☎ 0532 319444 or the First Computer Centre on ☎ 0532 319444.

If you're quite happy with the A1200's 68020 processor, then you may well be interested in a new A1200 RAM expansion from Power Computing. According to Power, work is progressing on a £200 RAM expansion for the A1200 that can be expanded to 8Mb and can also take a maths co-processor. Although the exact price is still to be finalised, Power Computing feels confident that it can keep the price down, even with 2Mb of 32-bit RAM installed as standard. What's more, the board will also offer a battery-backed clock, something that is missing from the MicroBotics range of A1200 expansions.

And as if that wasn't enough for the A1200, you should keep a look out for RAM expansions from Ashcom and WTS too.

FEATURES CHART • FEATURES CHART • FEATURES CHART • FEATURES CHART

A500 / A500 Plus

Product	Price	Supplier	Type	Size	Max. Size	Chip Type
PC501	£29.95	Power Computing	Trapdoor	512K	512K	256 x 4 DRAM
PC501+	£35.95	Power Computing	Trapdoor	1 Mb	1Mb	256 x 4 DRAM
ADD501	£21	Ashcom	Trapdoor	512K	512K	256 x 4 DRAM
ProRAM A501	£19	WTS Electronics	Trapdoor	512K	512K	256 x 1 DRAM
AddAx	£125	Ashcom	Bus	2Mb	8Mb	1Mb x 1 ZIP
Power 8Mb	£109	Power Computing	Bus	2Mb	8Mb	1Mb x 1 ZIP

A600

Product	Price	Supplier	Type	Size	Max. Size	Chip Type
AX601	£44.95	Ashcom	Trapdoor	1Mb	1Mb	256 x 4 DRAM
AmiTek 500	£44.95	Silica	Trapdoor	1Mb	1Mb	256 x 4 DRAM
ProRAM A601	£38	WTS Electronics	Trapdoor	1Mb	1Mb	256 x 4 DRAM
PC601	£39.95	Power Computing	Trapdoor	1Mb	1Mb	256 x 4 DRAM

A1500 / A2000

Product	Price	Supplier	Type	Size	Max. Size	Chip Types
A2058	£149	Commodore	Zorro II	2Mb	8Mb	1Mb x 1 DRAMs
Aries 2000	£129	Power Computing	Zorro II	2Mb	8Mb	1Mb x 1 DRAMs
GVP HD8+	£149	Silica	Zorro II	0Mb	8Mb	1Mb x 8 SIMMs

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8375 (A500+/A600) 2 Meg Agnus..............£41.35
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A500 UK Keyboard - factory new..........£31.00
5719 Gary..........£10.50
8520A CIA (2MHz) Great price..........£7.00
6570-036 keyboard control chip..........£8.50
A500 original P/S, 220 volts..........£47.00
A2000 original P/S, 220 volts..........£69.00
8373 Super Denise Upgrade..........£21.00
2.04 ROM (chip only - no manual or diskettes)..........£25.00

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- **MegAChip 2000 by DKB:** Upgrade your Amiga to 2 Meg of chip RAM. Includes 2 Meg Agnus, chip puller & 'Final Test." No soldering required. Same 8372B chip used in A3000.........£184.00
  Buy the MegAChip from us and we'll give you the new Super Denise for..........£18.00
- **Switch-Itt:** America's most popular ROM switch with speaker, keyboard controlled. Does not overlap the 68000 and works with all revisions..........£21.00
- **AdRAM 540 for A500 by ICD:** Add up to 4 Megs of RAM with battery backup internally in your A500. 1 Meg/2 Megs (install up to 4 Megs)..........£83.50/£104.25
- **Baseboard 601:** 1Mb chip RAM memory card for A600. Installs in trap door. Contains battery & clock..........£41.75
- **Amiga Troubleshooter:** Easy-to-use symptomatic guide to diagnose faulty ICs on the A500/A2000. Addresses over 30 of the most common problems..........£9.00
- **12 A 'Clock:** Real time clock/calendar (something your A1200 doesn't have)..........£21.00

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GVP A2000 42/80Mb Hard Disk Drive..........available...£285/£335.00
Amiga A570 CD-ROM Drive..........£239.00

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AS215 Workbench 2.1 Enhancer with/without ROM.........."..........£45/£75.00
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Kickstart V1.3 ROM for A500/2000..........free p&p..........£27.00
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1Mb Fat Agnus 8372..........free p&p..........£37.00
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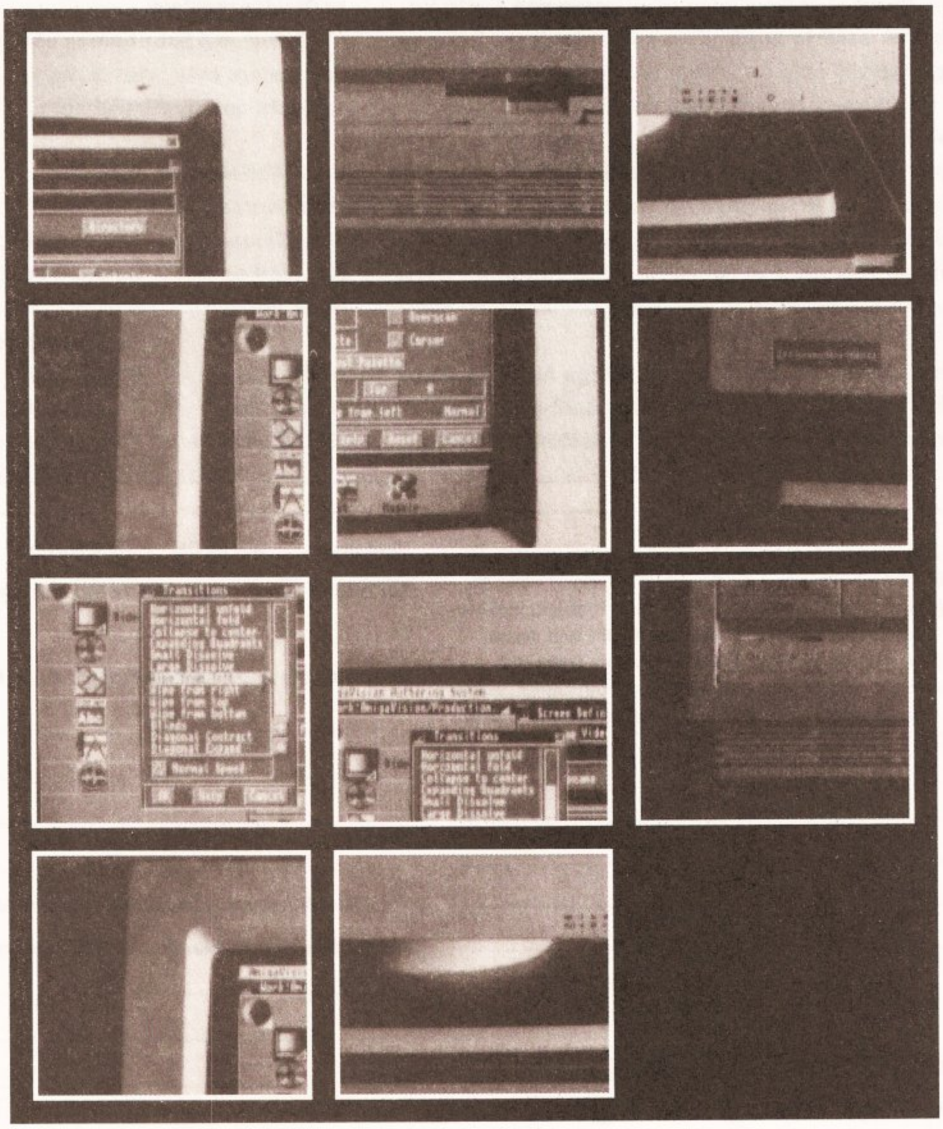
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AMIGA ANSWERS



SLOT IT ALL INTO PLACE

CONTENTS AT-A-GLANCE

SO WHAT DO ALL THOSE ICONS MEAN?

Beginners: this icon will appear next to any questions which are 'basic' in content.

General: this icon is used for any general Amiga-related queries.

Caution: be sure that you fully understand the answer before trying it out.

Danger: the answer to this question could well invalidate your warranty – or you!

Hardware: this icon is used to denote questions relating to general hardware.

Buying advice: we use this icon if the question asks us for buying advice.

Printers: this icon denotes a query about printers, printer drivers and so on.

Technical: any queries about programming will have this icon next to them.

Video: this icon relates to any query about using your Amiga with video hardware.

Music: this icon is for questions about MIDI, sampling, synthesisers and so on.

Programs: any program-specific queries have this icon next to them.

Comms: if your question relates to comms, this is the icon that we'll use.

WHATEVER YOUR PROBLEM WITH THE AMIGA, WE ARE HERE TO SOLVE IT

That's the task we have set ourselves in giving you the best possible support for your Amiga. We are confident that our experts can cope with any technical questions you can throw at them. If they don't already know the answer to your problem, they will find it out for you.

We are prepared to deal with any problem you have with the Amiga, from general enquiries about AmigaDOS or Workbench, through questions about specific pieces of software and hardware, to advice on what you need to buy to do a particular task. If it's to do with the Amiga, we will help out. What we cannot do is offer this service over the telephone – do not phone us with your enquiries, but write to us at the address below.

We also cannot enter into personal correspondence – all enquiries will be dealt with in the pages of the magazine. This does mean a bit of a delay in solving your problem, but you'll just have to be a little patient and wait for it to appear in print. You won't get a personal reply even if you enclose an SAE with your letter, so please don't bother.

Send your question on the form below to: Amiga Answers, *Amiga Shopper*, Beauford Court, 30 Monmouth Street, Bath BA1 2BW.

The Amiga Answers panel consists of our consultant editors Mark Smiddy and Jeff Walker – and, of course, our editor Cliff Ramshaw. We will also be calling on the services of all our other contributors, so you won't be able to catch us napping – whatever the subject of your query.

Each panellist will be dealing with queries in their own specialist area(s) so it would help us greatly if, when writing, you label your query envelope with the name of the expert who can solve your particular problem.

Below is a list of areas of expertise. It's a list that we will add to and update every month, so you will know who to write to about any subjects not mentioned here.

Gary Whiteley –	**Video**
Paul Overaa –	**Programming, music**
Toby Simpson –	**Programming, hardware**
Jeff Walker –	**Desktop publishing, printers**
Mark Smiddy –	**AmigaDOS, business, CDTV, hardware projects, hard and floppy disk drives**
Jason Holborn –	**Public Domain, AMOS**
Jolyon Ralph –	**Programming, hardware, CDTV**
Gus Chandler –	**All the other bits and pieces**

If you send in a question for the Amiga Answers experts, please fill in and include the form below (or a photocopy if you don't want to cut up your magazine). And please also make sure that you include all the relevant details – version numbers of software and so on – so that we have the best chance of helping you. Send your form and question to: Amiga Answers, *Amiga Shopper*, 30 Monmouth Street, Bath BA1 2BW. Sorry, but we cannot personally reply to any questions – even if you include an SAE.

Name: ____________________

Address: ____________________

____

____

Your machine:

A500 ☐ **A500 Plus** ☐ **A600** ☐ **A1000** ☐ **A1200** ☐

A1500 ☐ **A2000** ☐ **A3000** ☐ **A4000** ☐

Approximate age of machine: ________

Kickstart version (displayed at the 'insert Workbench' prompt)

1.2 ☐ **1.3** ☐ **2.x** ☐

Workbench revision (written on the Workbench disk)

1.2 ☐ **1.3** ☐ **1.3.2** ☐ **2.x** ☐ **3.0** ☐

PCB revision (if known). Do not take your machine apart just to look for this! ________

Total memory fitted (see AVAIL in Shell for 1.3 Workbench) ________

Chip memory available (see AVAIL in Shell) ________

Agnus chip (if known) ________

Extra drive #1 (3.5"/5.25") as DF__: Manufacturer ________

Extra drive #2 (3.5"/5.25") as DF__: Manufacturer ________

Hard disk: ____Mb as DH__: Manufacturer ________

Extra RAM fitted – type, size in Mb and manufacturer ________

Details of any other hardware which could help us to answer your question:

____

____

____

____

Now, use this space to describe your problem, including as much relevant information as possible. Please continue on a separate sheet if necessary.

____

AS 24

NO PROBLEM!

Welcome again folks to *Amiga Answers*, the section of the magazine where we endeavour to straighten out your hassles with that wonderful but occasionally stubborn machine, the Amiga. Every month we devote more space and apply more resources than any other Amiga magazine to solving your problems. We receive something like 100 queries a week, so the service is obviously appreciated.

It's my job to co-ordinate the whole thing: sorting through the questions and sending them off to the relevant chappies for the kind of in-depth answers you've come to expect; and compiling them into the lovingly crafted pages which you see before you.

I call on a variety of expertise to make sure you get the answers you need, which is why *Amiga Answers* is so successful. There's Mark Smiddy, industry guru, AmigaDOS-tamer and business applications wizard; Jeff Walker, probably the most knowledgeable Amiga desktop publisher there is; and Jason Holborn, long-time *AMOS* explorer and PD sampler, as well as good all-rounder (or should that be all round good guy?); and Toby Simpson, lead programmer for Millennium and accelerator expert.

If it's a question about video, I'll pass it on to Gary Whiteley, our professional videographer for whom the word 'genlock' means 'mixing Amiga graphics with video for magical results' and for whom the word 'snipwirral' means nothing.

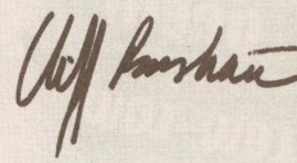
Programming queries are dealt with by Paul Overaa, who's not afraid to code in any language, and who doubles as a MIDI maestro to solve your sequencing slip-ups.

Our hardware guru is Jolyon Ralph. This man knows just about everything about disks, both hard and floppy, and what he doesn't know about memory he's probably forgotten. Communication breakdowns are fixed-up by Dave Winder, while general Amiga queries are dealt with by the indefatigable Wilf Rees – all in all, a formidable team. Let's face it, if we can't answer your question, it's probably one of the Mysteries of the Universe.

This month we give advice on buying tape streamers and emulators, the best way to perform cross-development, how to track down font errors, and much much more. Toby Simpson's *Code Clinic* on page 39 deals with a C program to calculate blitter parameters.

Keep sending us those problems – the solutions are just around the corner.

Cheers,



TRACE ON!

A I have an Amiga 500 Plus which is equipped with a Microbotics VXL-30 accelerator and 4Mb RAM. I use it mainly for ray tracing with *Imagine 1.1*. After reading about this topic in your magazine, I have a number of questions:

a) Is it possible to upgrade from *Imagine 1.1* to *Imagine 2* in the UK without paying the full £269? Or do I have to send off to the US and splash out more on International Money Orders and all that?

b) Is there a 68040 processor for the Amiga 500 Plus? I hear rumours that one is available, but I've never seen anything reviewed or advertised in the magazines.

Since I use my Amiga to take the delights of ray tracing into youth clubs, portability is very important. For this reason I find the new Amiga 1200 very interesting and might purchase one when this wretched recession ceases. Which brings me to:

c) Will the A1200, its screen resolutions, its expansion and any 24-bit boards talk to *Imagine?*

d) Will a 3D package based on radiosity techniques (which can render diffused lighting, soft shadows and such like) ever be available on the Amiga?

Finally, the kids seem to really enjoy what I do and using the accelerator a quarter-screen image can be rendered pretty quickly. When everyone is happy I render the scene up full screen at home and take it back for viewing the next week. But as you say, *Imagine* is comparatively heavy going.

Humphrey Reader
Weston-Super-Mare

The first thing I should say is "Well done" to you Mr Reader – keep up the good work in taking your Amiga images to the masses.

a) The UK importer of *Imagine*, Digital Multimedia Services (previously known as Computech), says that upgrades from *Imagine v1.1* to *Imagine v2* are available for around £80, but low demand (and minimum ordering quotas imposed by Impulse, who produces *Imagine*) means that the company won't be doing any upgrades until there is a reasonable number waiting to be done. The good news is that with *Imagine 3* due out sometime soon (but only available as an upgrade from version 2) it should be possible to bulk all the orders together and get you sorted out. Call DMS on ☎ 0702 206165 for more details.

b) Yes, the Mercury card from Progressive Peripherals and Software, which is the only one I am aware of. See the advertisements in *Amiga Shopper* for more details.

c) *Imagine* will only display directly to Impulse's own Firecracker board (which is NTSC only) at the moment. However, the rendered images can be displayed by any suitable IFF display device. HAM-8 is not yet supported by *Imagine*, though no doubt it will be in its next incarnation. If you need this mode, a program such as ASDG's *Art Department* can do all the converting for you.

d) I don't know of any in production (which doesn't necessarily mean there won't be), but it would be nice. The main problem will be speed – as the calculations needed will be massive – so there may never be a large enough market to justify the development. Like everything else, time will tell. ***GW***

JARGON BUSTING • JARGON BUSTING

Accelerator board – a device which either includes a central processor like the Amiga's, or a more advanced one in the same range, but operating at a higher speed. An accelerator is useful for calculation-intensive applications, such as 3D rendering.

RAM – Random Access Memory is used to store programs while they are being executed. All data that the programs operate on is also stored in RAM. Whereas ROM retains its contents forever, the contents of RAM are lost when the power is switched off.

24-bit graphics – normally, the Amiga uses between one and five bits (binary digits) to store the colour of each pixel (picture element) of a display. This means that between two and 32 colours can be displayed. Hardware add-ons are now becoming available which use 24 bits per pixel, giving a possible 16.7 million colours.

KEYBOARD CORNER



I have a very simple problem. I'd like to shift the bulk of my computer equipment away from my desktop, leaving nothing more than a keyboard and a screen. As I own an A500, I will obviously need an external keyboard. I know that Checkmate produces such an item for £70, but this is rather expensive. Is there an adaptor available that will allow me to connect an A2000 keyboard to an A500?

Also, I plan to upgrade my system in the future, but I'm not overly keen on buying the A1200 simply because it seems to me that the machine is simply more of the same. What are the chances of Commodore releasing a new mid-range machine?

David Powell
Warlingham
Surrey

Checkmate still produces its external keyboard kit for the A500 but, as you say, it's a little expensive. Unfortunately, no one else actually produces such a kit, especially not in the form of an interface that would

continued on page 29

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AMIGA 1200

Probably the home computer of the decade, the A1200 is the latest addition to the Amiga family. Incorporating a new internal engine and many more exciting and powerful features, this machine truly takes the Amiga family into the next generation

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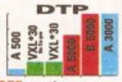
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continued from page 25

allow you to connect up and use an A2000 keyboard (come on all you hardware developers, get to it!). The main problem with such an upgrade would be that the Amiga 2000 keyboard doesn't come cheap. I recently had to buy a keyboard for my Amiga 2000 and I was shocked to learn that their price had recently doubled from a very reasonable £40 to an eye-popping £80. Add to this the price of an interface (if such an item existed) and you'd be paying over £100 for the privilege of an external keyboard. ***JH***

EMULATE IT!



As part of an engineering course I have to complete a module on micro-processors. Upon reading the small print I discovered the hardware required would be an IBM compatible computer with 512K and *Turbo Pascal 5*. Is it possible to adapt my A500 Plus to complete these requirements or should I just scrounge the loan of a PC?

CJ Hudson
Trundra Isle
Shetland

On the software side you should just be able to get away with a PC emulator – one of the recent software-based ones should be able to do the job (albeit a little slowly). A better option would be a hardware emulator such as AT-Once or the KCS Power PC board. In any case, you should also check whether *Turbo Pascal* has other requirements, like a hard disk.

The crunch may come if you need to use some PC hardware – such as the internal 8-bit expansion ports. If this is the case your A500 would not do the job and you would have to blag a real PC for the duration. ***MS***

DEVELOPING WORLD



I consider myself a very competent 68000 assembly programmer, but feel restricted in developing on a single machine. I have, however, recently acquired a fairly high spec PC and would like to use this as my development machine. My question then concerns the cross-assembler. I have heard of a couple: *SNASM* and *PDS68000*. Could you tell me which is the best, how much they cost, and where I can get them? I mostly program games.

Mark Nixon
Caldmore
Walsall

This is a tough one. Not because I don't know anything about *SNASM* or *PDS* – we have both in the office for development work. The thing is, both products are expensive (*SNASM*, for example is £2500) and currently make programming legal games software very difficult. The *SNASM* kit is actually some software, a cross-assembler and a special SCSI system to link the PC to the Amiga (through the expansion connector).

If you've developed on the Amiga, quite why you'd want to subject yourself to working on a PC is beyond me! The advantage of cross development using *SNASM* and such like is the control over debugging you have. An alternative, for half the price, is to buy a high spec A3000, and develop on that. You can then assemble to disk or use networking hardware to run off the other one – which is how I develop games on the Amiga. That way I get all the advantages of the Amiga's multitasking operating system. It's a sort of half-cross-development and it's a lot cheaper than *SNASM*. But if you're still interested in finding out more about *SNASM*, call Cross Products on ☎ 0532 429814. ***TS***

JARGON BUSTING • JARGON BUSTING

Assembly language – is written as a series of short words known as 'mnemonics' – these are translated directly into numbers for direct processing by the computer's micro-processor.

Emulator – either hardware or software that enables programs written for another machine to be used on the Amiga. The emulator is transparent to the programs running under it.

Genlock – a way of slaving one video source (say, an Amiga) to another (video tape, for example) in order to synchronise their signals. This will allow stable wipes, mixes and other effects including overlay between the two sources.

PC – IBM PC-compatible computer based on one of the Intel 8067 or 80xxx series CPUs, and with similar hardware/software configuration.

Printer driver – a program that sits in-between any applications program producing output and the printer. It converts any codes describing text and graphics format into a form suitable for a specific printer.

DISAPPEARING DISKS?



On various occasions when I insert a disk in df0: the disk drive light comes on (as normal), the drive clicks a few times, the drive light goes out and then everything reverts back to the Workbench screen! Sometimes I have to insert the disk several times before it will load. The drive seems to recognise a disk has been inserted but fails to load.

Do I require a new drive?

A Beales, Bures, Suffolk

I'm afraid the prospects don't sound all that good. What's more, disk drives are usually difficult, and often impossible to repair – for the price of a visit to a repair centre you can just buy a new internal drive which will satisfactorily replace the existing unit. ***JR***

MOVING ON UP



I have recently been toying with the idea of buying an Amiga computer ever since handing over my Sinclair Spectrum 128+2A to my son. As my finances are limited, I was originally going to purchase an A500 Plus. We have seen this has now been superseded by the A600. I have two problems:

a) With my Spectrum 128+2A I was able to run a Fujitsu M3328B printer directly out of the printer port. I have no manuals with the printer due to it being surplus BT equipment. If I purchase an A600 will this work or will I have to alter the DIP switches inside? And which driver would it use?

b) As I can't afford to buy a monitor at present, I intend to use an Hitachi CPT 1646 colour TV which has a switchable RGB/TV facility as standard. The socket on the TV end is a 7-pin DIN type. I have enclosed the connections for the monitor side. Will this work on an Amiga?

PC French
Basingstoke
Hants

A wise decision! An Amiga is a good buy, whatever the model, although I personally would recommend the A1200 for maximum price-performance value, depending of course upon what you want to use it for. So, with that out of the way, let's take your questions one-by-one now:

a) Check the connector on the Fujitsu printer. If the socket is a Centronics 36-way connector (about 5cm wide, 1.5cm high and wedge-shaped, with a long slot in the centre), then the printer is compatible with all Amigas. All that is required is a suitable cable, available from most Commodore dealers.

b) After contacting Hitachi (☎ 081 849 2000), I was told that the Hitachi 1646 Colour TV has an Analogue RGB input. So it will work with all Amigas, although a lead will have to be constructed to match up the particular connections. ***WR***

SCREEN DEBUT



Over the past two years I have become very interested in home video and in that time I have purchased a fair amount of video equipment, most of which is S-VHS compatible. I now wish to make my home productions to a more professional standard – but purely as a hobby which is of use to my family and close friends.

My problem is that I am not a computer buff. I have found your magazine invaluable in learning through lay terms more than I have comprehended from any other magazine in the marketplace – I now subscribe to *Amiga Shopper* – and I've decided that it would be nice to have an Amiga to assist with graphics, titling, and so on.

However, I find the whole matter rather confusing – when I go to the Amiga shop I am confident of the product I want to buy (probably an Amiga 1500 with 4Mb of RAM), but when I mention to the salesman that I want to interface it with video then the whole conversation seems to go downhill and usually ends up with "Go and see the video shop, they should be able to help".

When I arrive at the video shop I am informed that the Panasonic AVE-5 mixer that I am considering buying does not need a genlock. I then enquire as to what titling facilities can be used and find that the systems available are very basic, even though some cost nearly £200. After that it's downhill all the way.

Therefore could I enlist your opinion as to what equipment I need to make successful home videos, at a budget reflecting the standard of equipment I already have? I think I need an Amiga 1500 with 4Mb of RAM and a 40Mb hard disk, a multisync monitor, a genlock, a RocKey and a Panasonic AVE-5 video mixer. Software would likely be *Broadcast Titler 2* and *Deluxe Paint IV*. But what do you think?

I would be grateful if you could provide a diagram of how to connect

all these various bits and pieces together because there are umpteen ways of plugging leads into my equipment and I'm not always sure if I am doing it correctly. Also, in the future I may well want to use my Amiga for word processing and similar business-type uses, so if there is anything else you think I need, please don't hesitate to let me know.

KG Brown
Clare
Suffolk

It's a difficult time to be advising folk what kind of Amiga equipment to be buying for video use. With the new Amigas available my inclination is to point you towards them because they offer much more for the graphics user, as well as more speed and stability. But the A4000 is likely to be outside your price range and the A1200 has to have a hard drive and extra memory added to really make it applicable to your needs. And then there is the real possibility of buying an Amiga 3000 at knock-down prices. Or picking up a well-equipped A2000 or 1500 second-hand. I told you it was difficult, didn't I?

Still, you asked for specific advice, and that's what we're here for. I suppose if I had to make the choice I'd probably have to choose the Amiga 1200, expand its memory by adding at least 4Mb RAM and install the largest hard drive I could afford. A good dealer should be able to advise you on this. Although you don't strictly need a multisync monitor, one of these will help to keep your eyeballs steady if you don't like the interlace jitters, though remember that you'll need to check your work on a video monitor as well – which won't be a problem as the A1200 has composite, RF and RGB video outputs.

Forget the chroma-keyer for now and concentrate on buying a good genlock, perhaps a GST Gold or Electronic Design YC genlock – and expect to pay at least £400. While chroma-keying is interesting, it's certainly not an essential piece of startup kit and, like the RocGen, cannot handle S-VHS.

To do your video mixing you'll still need a mixer, so the AVE-5 may well suit your purposes. Take its output to the genlock and you can overlay graphics and still do effects behind the Amiga images.

For graphics software there isn't yet a lot of choice, as titles are only just starting to appear which support the new graphics modes. I've heard that an AA chip version (for the new chip set in the A1200 and A4000) of *Broadcast Titler* is ready, but I have no more details. A revamped *Deluxe Paint* should also be available by the time you read this, as should *Brilliance*, touted as being the new paint champion. But only time will tell, so the moral here is either to wait a while, or test before you buy. Don't forget to add *Scala* to your shopping list too, as it can add another dimension to your work. And get hold of some good typefaces too – a set of Agfa Compugraphic fonts can be very useful, as can some of the PD font sets.

I'm sorry I can't really advise you on how to connect everything together, since I have no idea what equipment you will be buying. But don't worry, it really isn't too difficult – most of the items can only be connected in one way.

For business use you'll likely require a printer, and (obviously) some business software. But as you don't mention your business aspirations I can't really take it any further. Rest assured, when you want the right stuff, you'll be able to find it – unless it involves chicken sexing, nuclear power or something really obscure. ***GW***

JARGON BUSTING • JARGON BUSTING

Compugraphic fonts – rather than a simple bit-mapped image of each character, which grows more jagged with magnification, a Compugraphic font represents the shape of each character within the font as a mathematical equation of the outline. Consequently, as the magnitude of the character is varied in printing, no information is lost and the result always looks smooth.

Hard drive – like a floppy drive, but much bigger and faster. Also, the disk cannot be removed, so once the hard drive has been filled, it's either time to delete excess files or get another one.

PostScript – A powerful mathematical language used to describe graphics and text images to compatible printers. Because it does not rely on a pixel system, objects so described can be scaled and rotated without distortion or loss of detail.

POSTSCRIPT POSER



Having wasted months trying to print a full A4 page from my B2000 to a HP Laserjet III, I gave up and installed another 2Mb of memory and a Jetpage PostScript cartridge in the LaserJet. The B2000 and the printer now both have 3Mb.

Now, outputting as PostScript whenever possible from *Excellence! 3.0* and *Professional Page 2.1* has solved most of my problems.

Trying to make some money from DTP – leaflets, mailshots, manuals and so on – I bought *CGFonts Vol 1* from George Thompson Services to add some interesting fonts to *Professional Page*. When I include downloadable fonts in the PostScript output (having installed everything in the right place), the printer appears to process the data correctly but fails to produce any output, simply returning to its 'ready' status.

Outputting to a file shows that the correct 'fontname.psfont' file from the CGFonts:PS directory is included. Knowing that downloadable fonts are removed from printer memory after use by *Professional Page*, I sent the 'fontname.psfont' file to the printer using the CLI then used *Professional Page* without including downloadable fonts. I got the same result – nothing, that is.

George Thompson Services informs me that these fonts were tested by Jeff Walker, "the DTP guru man", and work correctly. It was suggested that I should upgrade the LaserJet to 4Mb. Surely this shouldn't be necessary just to produce a simple A4 page using only a single 'softfont'?

CPI, who make Jetpage, guarantee Adobe Type 1 and Type 3 (.psfont) softfont compatibility.

The disappearance of output also occurs if I send an EPS file (170K), produced by *Touch-Up 1.04*, to the Laserjet directly via the CLI or as part of a page from *Professional Page 2.1*.

BE Matthews
Walsall
W Mids

I certainly tested some of the Type 3 typefaces on the GTS disks, but not all of them. The ones I tested worked fine on a laser printer that contained a standard version of Adobe PostScript, as opposed to a third-party implementation. I've even used one or two in documents that have been printed on an Imagesetter.

Normally, if a particular typeface is not available to the PostScript printer, the text set in that typeface gets printed in a default typeface, normally Courier. When a PostScript printer doesn't print and returns to its 'ready' state, this is normally caused by PostScript crashing and resetting the printer – just like programs on the Amiga can crash and reset the computer. This is usually because PostScript has run out of memory.

But as you say, 3Mb is plenty for an A4 page and just one softfont, providing the softfont isn't massively and enormously complicated, which none of the Type 3 typefaces on the GTS disks are.

Try a little test. Create a tiny little PostScript page – say, business card size – make sure the 'PostScript Output Specs' in 'Alter Current Page' are set to the small size, and use the softfont to type a few words. Then output that to the PostScript printer, including downloadable fonts. If it prints OK, then it looks like there is a memory problem that another 1Mb may cure; if it doesn't print, then either the Jetpage PostScript cartridge is not completely Type 3 compatible, or the Type 3 typefaces on the GTS disks (which were created with the *FontManager* program that comes with *Professional Page 3.0*) are faulty.

If you had told me the exact typeface you are having trouble with, I could have tested it for you. But you didn't, so I can't. So I picked one of the typefaces from Vol 1 at random (UpperEastSide) and output that as PostScript to the *SaxonScript Professional* PostScript interpreter, and it worked perfectly. I'm pretty sure that the Type 3 data is OK.

So it's either not enough memory in the printer, or the Jetpage PostScript cartridge is not as compatible as it claims to be.

The EPSF output from those early versions of *Touch-Up* is not the full shilling, which is probably why the Save EPSF option is missing from later versions. We're up to version 3.02 now, by the way. ***JW***

TRANSPLANT SURGERY



I have an A500 Plus with a GVP Series 2 hard disk and various other bits and pieces. While I think it is an excellent machine, there are one or two drawbacks. I do a lot of writing and I find the A500 keyboard particularly awful. I understand that there is a company that manufacturers an adaptor that allows you to connect a PC keyboard to the Amiga.

Now I'd like to buy one of these but – to save space on my already crowded desk – it would be really useful if I could transplant my A500 into a PC box along with the hard drive, second disk drive and keyboard adaptor, then sit my monitor on top of the box.

As far as I'm aware, these boxes are pretty cheap – I remember reading a letter in *Amiga Shopper* from a reader who had already carried out the transplant operation that I described. Is there any chance of producing a DIY project within the magazine?

Finally, is it likely that the new AGA chip set and Workbench 3.0 will be released for the A500?

William Hudders
Roundhay
Leeds

A couple of interfaces are available for the Amiga that will enable you to connect and use a PC keyboard. Unfortunately, these are only available for the CDTV and any Amiga that has an external keyboard. Even if you were to successfully modify the A500 so that the interface could be used, there's not a great deal of point to the exercise.

I was forced to use a PC keyboard on my Amiga 2000 quite recently and I have to admit that it was not a pleasant experience. For a start, the Amiga relies heavily on those special Amiga 'A' keys which the standard PC keyboard layout doesn't offer. Although a PC keyboard is fine for straight text processing, try using it for any other form of keyboard entry and you'll find it sadly lacking.

The other alternative is to treat yourself to Checkmate Digital's keyboard conversion kit (it costs approximately £60) which moves the A500's existing keyboard out of the A500 box and into a steel keyboard enclosure. It's rather clunky, but it does work. As discussed in the second of this month's questions (see 'Keyboard Corner', page 25), I'm surprised that no one has yet come up with an interface which allows A500 users to connect and use an Amiga 2000 keyboard.

As for the case conversion, I see no reason why the A500's innards couldn't be transplanted into a PC case, but you may have to mess around with a lot of connector extensions to get the A500's connectors to fit into the holes provided in the PC casing. A DIY case conversion kit project wouldn't actually be a bad idea for a feature within the magazine – I'll certainly suggest it to our illustrious editor, Cliff *(consider it suggested -Ed)*.

Although Commodore claims that it has approached several third-party vendors to encourage them to produce an upgrade that will allow 'standard' Amigas to use the new AGA chip set, I personally don't think that such an upgrade will see the light of day. The new chip set is based around 32-bit technology, so squeezing it into a 16-bit A500 isn't going to be easy (if at all possible). There's good news on the Workbench 3.0 front though – although Workbench 3.0 is written specifically for the new chip set, Commodore has just launched Workbench 2.1, a version of 3.0 that will happily work on standard Kickstart 2.04-based Amigas. ***JH***

BRANCH LIBRARY



No matter what I do I cannot get *Fountain* to work. Every time I try to open the program I get a message: "Cannot open diskfont library V37". I understand from some instructions it is necessary to change the LIBS: assignment, but I have tried this to no avail. Can you please explain in plain English what I should do?

EJ Storey
Barking
Essex

This is quite a common problem and seems to stem from the fact that some copies of the Workbench 2 disks were sent out with the wrong version of **diskfont.library**. This is a collection of routines for handling fonts stored on disk (as opposed to the two in ROM). Two versions should be supplied with Workbench 2: version 36 on the Workbench disk and version 37 on the AmigaFonts2 disk. In either case these files are stored in a drawer marked LIBS.

To check which one you have you need to open a Shell and place Workbench 2 in your internal drive and AmigaFonts2 in the external drive. Now enter the following commands (Shell's output is also shown – you only enter the line after the '1>' prompt):

```
1>VERSION LIBS:diskfont.↵
library FILE
Workbench2:Libs/diskfont.↵
library 36.1

1>VERSION DF1:LIBS/diskfont.↵
library FILE
AmigaFonts2:Libs/diskfont.↵
library 37.58
```

(Don't try typing in the '↵' symbol – it's just there to show you where commands go over the end of a line). The output from your machine may look slightly different, but the part we are interested in here is the number. This is split into two parts: the version number and revision number. Let's say it reads 37.58 (as it does in our example). This means version 37 and revision 58. The version number is the important part and that must be 37 or higher for *Fountain* to work. If the **diskfont.library** is version 37 on your AmigaFonts2 disk, you are part way there already: if not, you'll have to find a friend (or dealer) who has one.

When you get hold of the right disk, pop it in the external drive, put Workbench in the internal drive, open a Shell and enter this:

```
COPY DF1:Libs/disk#? LIBS:
```

and *Fountain* will suddenly start to work like magic. ***MS***

SYMBOLIC LOGIC



I am doing an Open University maths based course and I want to use my Amiga and Panasonic KXP-1124 printer to write out tutor-marked assignments.

However I need to use special mathematical symbols, which are not included in the standard fonts. I use *TransWrite* predominantly, but realise that I may need to get another word processor.

Keith Irving
Lyneham
Wiltshire

It sounds like *Wordworth 2* will be right up your street – it comes with no less than four mathematical symbol Compugraphic (outline) typefaces. ***JW***

MISLEADING INFO?



I recently purchased a GVP A530, with an 80Mb Hard Disk. I am very pleased with it, but have a few questions:

a) *SysInfo* tells me that the boot priority of my Hard Disk is –10. Is there any way of changing this to shorten the startup delay?

b) *SysInfo* also informs me that the MMU in the 68030 is not active. Do I have an MMU?

c) I would like to upgrade to 1Mb of Chip RAM. *SysInfo* (again!) tells me that I have an ECS Pal Agnus. My computer is fitted with an original Commodore A501 RAM expansion. How should I upgrade?

d) Is there any way of installing *F-19 Stealth Fighter* on my hard disk? When I insert Disk A in df0: WorkBench tells me its structure is corrupt and to use *DiskDoctor* to correct it.

I'd also like to congratulate GVP on how easy it was to install my A530 – it really is simplicity itself!

Richard Munro
Charterhouse
Surrey

a) 'Boot Priority' has nothing to do with the length of time the boot takes. This is the order in which the Kickstart will check drives before booting off them. You will also observe that df0: has a higher priority than your hard disk – this is why if you reset with a floppy in the drive then it will run the floppy rather than the hard disk. The startup delays depend on the drive setup time – some drives need a lot of time to accelerate to speed and perform various tests.

b) No, you do not have an MMU. The MMU is a Memory Management Unit, and is very useful for programmers as a debugging tool.

c) In theory it should be very easy to upgrade to 1Mb of chip RAM, but without knowing your A500's board revision I can't tell you just how easy this would be! Speak to your local dealer or one of the advertisers in *Amiga Shopper* – they should be able to help you out.

d) No, I'm afraid. It is a non-standard disk format, and this sort of format will not install onto a hard disk. More and more modern games are able to install on hard disks now, so watch out for them. ***TS***

WIDEN YOUR REPERTOIRE



I'm using *Sequencer One* for most of my MIDI requirements but I would like to have some software which will allow me to store a dump of the sounds from my Roland D10 (via SysEx Messages) and of course put them back so that I can have a larger bank of sounds to play with. I'd also like a sound editor program. Do you know of anything which may help?

Rob Darke, Whitecross, Hereford

Since you need both a patch librarian and a patch editor one solution would be to opt for Dr T's *XOR*. It's expensive but since it is a generic editor librarian package that supports, and will continue to support, all major synths and synth modules, it may turn out to be the most viable option in the long run.

Another possibility is to use separate packages. For example, you could use something like the *Bars & Pipes* 'PatchMeister' as the librarian and a dedicated patch editor program (Dr T markets a series of patch editors including ones for the D-10). ***PAO***

MIX AND MATCH



I have a GVP Impact II 52Mb hard drive. Can I add a 1Mb x 8 SIMM chip in the drive to give me an extra megabyte of fast memory? Also, will this memory help speed up *Wordworth* as it sometimes becomes slow and I can type faster than it? Plus, would I need a monitor to see the *Wordworth* text clearly (some fonts are unreadable on my TV)? What is disk fragmentation, and does it slow down disk access?

In *Deluxe Paint III*, can I draw a background picture then add another IFF picture into that from

Powerscan? If I draw a background I load _Powerscan_ IFF which erases the current background. Do I have to use the brushes or something?

Finally, can the Canon BJ-10ex be upgraded to colour?

Hassan Ali
Mile End
London

You can use your 1Mb x 8 SIMM in your GVP hard disk, but you will need to add two – one on its own will not work. Buy a second 1Mb x 8 SIMM – it should cost less than £30. Make sure it is the same speed as the SIMM you already have – read out the number on the chip to your supplier and they will be able to find a matching SIMM for you.

Adding this Fast RAM will make *Wordworth* run faster, anything up to 30% faster than normal. Doing any serious Amiga work on a television set can be painful, so I would definitely suggest getting a monitor if finances allow.

Disk fragmentation on hard disks is where files are split up on the hard disk and stored as small pieces, rather than being stored together in one large lump. This usually happens when the disk is nearly full and there is not enough room to store each file in one large piece on the disk. It slows down file access because the hard drive heads have to move around the disk a lot to load each piece of the file. To get rid of fragmentation back up your hard disk, and reformat using the AmigaDOS command:

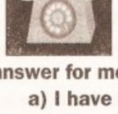
```
sys:system/format drive dh0:↵
name HardDisk noicons quick
```

You do not need to use your hard disk setup disk. Next, restore your backup. As the backup is restored each file is written back in one piece, and this gets rid of fragmentation. There are public domain utilities that claim to eliminate hard disk fragmentation, but personally I'd never trust any public domain utility with my hard drive data!

There are several ways to add a picture onto a background in *Deluxe Paint III*. Possibly the easiest is to draw your background and then load the other picture as a brush.

The Canon BJ-10ex is a bubblejet, which uses ink cartridges. Coloured cartridges are available, but only one can be used at a time. ***JR***

MAKE THAT CALL



I have several questions about the 'public domain', which I hope you can answer for me.

a) I have read your pages about public domain software, and understand that it is possible to download programs from a bulletin board. How exactly do I do this?

b) Can you suggest any bulletin boards and their phone numbers?

c) Do you have to leave some programs of your own on the bulletin board, and how do you go about doing this?

d) How would I go about setting up a public domain library, as I've heard that anyone can do this?

e) Is my ICL 2426D modem suitable for this purpose?

f) Is it possible to print pictures of parts of games and, if so, how?

Ian Buckley
Stockport
Cheshire

a) To download PD programs from a bulletin board you need a 'modem'. This is a device that plugs into your telephone socket and the serial port on your Amiga. You also need some suitable software. I use *NComm* which is an excellent shareware package. This means that if you like it then you send an appropriate sum to the author.

You also need, depending upon your age and disposition, the permission of the owner of the phone, as bills somehow tend to escalate when you get into computer communications (or 'comms' as it is usually known). Phoning a board is as easy as entering the required digits into a requester box.

b) Here is a list of some popular UK bulletin boards and their telephone numbers:

01 for Amiga	**071 377 1358**
Meridian BBS	**0273 588924**
Ponty BBS	**0443 409882**
Amiga Forgery	**0908 604229**
Guru 10	**0738 52063**
Yukon Ho!	**0232 768163**
Saxon	**0273 308800**
Chiba City	**0501 44262**
Protocol BBS	**0403 272931**
Theatre West End	**0625 828795**

c) No, but you can if you wish. However, the temptation to stick any old rubbish onto the board is rather high, so use considerable restraint, and remember, the copyright laws apply to bulletin boards just as much as they do elsewhere.

d) Public domain software is freely available to anyone, and can be readily copied. To start your own library, all you need is loads of PD programs and the time to organise yourself. However, there are cautions and pitfalls. Advertising costs a lot of money, and you may not sell any of the programmes at a profit – you may only request a fee for postage, disks, handling and so on. Many PD houses began by advertising in the small adverts in the pages of *Amiga Shopper*, and developed from there. I wish you luck, but don't expect to become rich from it.

e) Your ICL 2426D will work fine.

f) Your last question is unrelated to the others, but there are a few ways to do what you ask. The first and most important point is whether the game you want to grab an image from is multitasking. To find this out, perform this simple test: can you pull down the screen to reveal the Workbench screen?

If you can do this, then the task is fairly simple – all you need is a simple screen grabber such as *Screen X*. This is a PD package which does the job of screen grabbing very well. The program loads itself into RAM and, while resident, will enable you to grab any current image in your game. This can be saved to RAM as an IFF file, and then printed out via *DPaint*, or any other suitable package. Another package which performs the same task is *Grabbit*, but this is not PD.

If the software does not multitask, which I'm afraid is usually the case, then the problem is much greater. Working as a journalist, I constantly need this facility, and along with most of my colleagues, I use Datel's Action Replay cartridge. This will grab a screen from anything thrown at it. One small point, however, is that it does not always include any sprites which may be in the image. ***WR***

JARGON BUSTING • JARGON BUSTING

Digitiser – a device which takes the analogue information from a source such as a video camera and converts it to digital screen information for use by a computer.

IFF – Interchange File Format is a means by which data from different graphics or sound sampling programs are saved in a compatible way. It allows data to be exchanged between programs very easily.

Modem – a device which connects to the Amiga's serial port and converts computer signals into a suitable format for transmission along a phone line. Likewise, it will convert incoming signals back into a form the computer can recognise. External modems will work with any micro computer, although it is possible to buy Amiga-specific cards to plug into the A1500, A2000, A3000 and A4000, thus keeping the serial port free for something else.

REACH FOR THE STARS



I have just bought a Star SJ-48 printer. Does Star make a specific driver for it, and which setting from Preferences (1.3) would give the best results? Is it possible to upgrade it to colour? Which printer driver should I select from _IntroCAD_?

Colin Paine
Bognor Regis
W Sussex

Star recommends a driver called Star24Plus, which should be available from your Star dealer. If not, phone Star and ask; the number's in your manual.

Density 7 and Grey Scale 1 is the best graphics resolution (360 by 360 dpi), and these are really the only things in Printer Prefs you need to touch. For *IntroCAD* select an Epson 24-pin compatible driver.

Finally, no it's not possible to upgrade the SJ-48 to colour. ***JW***

THREE INTO TWO



I have two Amigas – an old 1.3 A500 with 1Mb Chip and 1Mb RAM and a new A1200 with 2Mb Chip RAM and a 60Mb internal hard drive. I have three questions to ask:

a) I have obtained an Olympus VX-303 camera to use with my Vidi-Amiga 12. The camera normally connects to a video recorder using a 10-way plug. Could you tell me which pin is for the video output and its earth, as well as the 12V pin?

b) Is the HAM-E mode on the Vidi-Amiga 12 compatible with any mode on the new A1200?

c) If I bought a modem from America would it be compatible with our phone connectors or would I have to fit a new connector?

Chris Mallard
Chessington
Surrey

a) The folks at Olympus tell me that this camera was discontinued about six years ago, but that it cost over £2000 when new and had a good lens system, so if it is in good condition you should be OK. However, they couldn't directly lay their hands on the pin information you require, as the service manuals weren't at hand. But they would like to help and suggest that you write, giving details of your problem, to Robert Smith at Olympus, 28 Honduras Street, London EC1Y 0TX (☎ 071 541 4440) and he will do his best to sort it out.

b) Not as far as I know, but there is EREG mode which is for using 256 colours with the AGA chips.

continued on page 37

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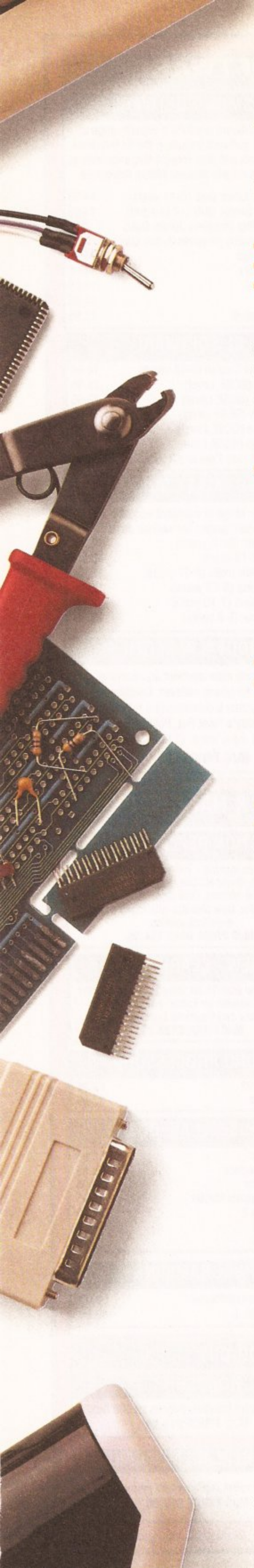
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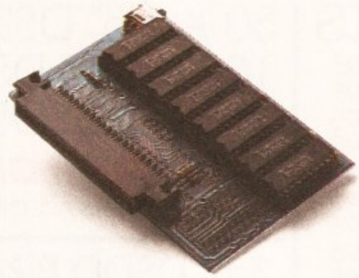
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continued from page 32

c) In all likelihood you would have to supply a connector yourself, but you could always check first. Even some modems bought in the UK need new connectors – such as the SupraFaxModem. You may also need a power transformer for your planned buy. Unless you're there in person, you may be better off buying from a UK supplier, since at least it will be easier to sort out any problems should anything go wrong. ***GW***

OPEN WITH CARE

I recently invested in a GVP 52Mb hard disk for my Amiga and was impressed by the remarkable increase in speed it afforded when loading programs such as *DPaint*, *Wordworth* and *Maxiplan*. However, although loading the *Maxiplan* application takes very little time, saving and loading worksheets is not noticeably faster than using a floppy disk. Why?

Renato Mozzachiodi
Burnside
Glasgow

Ah, the 65 million dollar question. The time taken to transfer information from a mass storage medium to memory is directly related to the speed of the transfer hardware. So, since the hardware controlling a hard disk is considerably faster than that of a floppy disk, the data gets into memory faster. However, the speed at which an application processes the data is controlled by software.

If the software can process data faster the storage media can retrieve it, you will notice an increase in speed when you accelerate the mass storage media. Typically this applies to applications which merely buffer the majority of information in RAM while loading and process it later: word processors for instance.

Conversely, if the application processes the data while it is being received, the transfer speed is affected by the speed of the software – and this is the case with *Maxiplan*. If you were to accelerate your Amiga by 300-400%, you would notice the improvement as *Maxiplan* should then be able to process the data faster than it can be retrieved from hard disk. And the same is true for saving data too. ***MS***

ONE-OCTAVE OCTAMED?

I have *OctaMED 4* but my samples, obtained from cover disk and PD sources, cover a very limited note range – one octave above middle C. Is there any way to extend these?

D Cussel
Margate
Kent

You seem to feel that you are are limited to a fixed single octave range when using 1-octave IFF samples with *OctaMED* – this is not true. Are you, for example, aware that there are *OctaMED* gadgets which can change the note range of all, including 1-octave, samples? Ranges can be further extended by obtaining, or by creating yourself, either 3-octave or 5-octave IFF samples. Editors like *Audiomaster* will, for example, let you read in a 1-octave sample and re-store it as a 3- or 5-octave IFF file. ***PAO***

SLIPPED DISKS

When Workbench is loaded up in my internal drive and Extras is inserted into the external drive on my 1.3-based A500, the Workbench doesn't always recognise the disk and simply displays a disk icon labelled 'DF1:BAD'. If these disks are then copied and they are used in place of the originals, all is fine. Also, if I then put the offending disks into the internal drive, they are recognised instantly. What's going wrong?

Simon Edgley
Luton
Beds

It sounds to me like your external drive is in need of a well-earned service. The troubles you mention could be caused by any one of several problems ranging from dirty heads to head alignment. My advice to you would be to take the drive along to your nearest service centre and ask them to sort it out. Although it is theoretically possible to realign and even clean the heads yourself, I wouldn't advise it. ***JH***

SHARE YOUR 1200

For the past two years I have used an A500 with a 0.5Mb expansion for DTP, word processing and some games. I am now considering upgrading to an A1200 but have a few queries:

a) Is it possible to fit a ROM sharer to the A1200 that will take all three versions of Kickstart: 1.3, 2.04 and 3.0?

If so, where can I get hold of one and will it solve many incompatibility problems?

b) Is it better to add 2Mb of 32-bit or 16-bit memory, and what is the difference?

c) Would it be worth having a 68881 or 68882 FPU fitted?

d) Would the A670 CD-ROM drive, or any other A600 peripherals work on the A1200?

Mr SJ Moran
Edith Weston
Oakham

a) No – you can't do it. Kickstart 2.04 and Kickstart 1.3 will not work with the AGA chip set which means you would run into serious problems if you tried something like this. In addition, there is no space inside the A1200 that would allow such a monstrosity to be fitted, and more importantly, the ROMs in the A1200 are 32-bit, and there are two of them. Conventional 16-bit ROMS won't fit – you'd have to fit A3000 ROMs, and these would fail with the AGA chips.

b) You can only add 16-bit memory through the PCMCIA port on the A1200. 32-bit memory is always recommended, as it is approximately twice as fast. This is because the computer can operate on four bytes of memory at once as opposed to only two in 16-bit systems.

c) It depends on what you are doing. The FPU speeds up floating point operations. DTP programs will benefit, as will art work, design, and CAD applications – such as *Real 3D*, *VistaPro* and so forth.

d) No-one knows yet. Anything that connects to the PCMCIA port on the A600 will work fine on the A1200, and vice-versa, as PCMCIA is an industry standard. ***TS***

A REAL WASHOUT?

On purchasing 10 diskettes from a mail order company, I also received a 'disk head cleaner' free. The manufacturer recommended that it is used at least once a day.

Do you agree, or is it advisable not to use this at all? The type they sent me is the sort that uses a fluid in conjunction with a special disk with a felt-type insert.

A Gill
Beighton
Sheffield

CD-ROM NEEDS CD-RAM

Having owned two Amigas in the past 18 months the CDTV seemed the ideal upgrade so I went for it. The problem is I can't find a stockist anywhere who sells extra memory which doesn't invalidate your warranty. I have also tried everywhere for a wired mouse or joystick that plugs into the CDTV. Are there any available, and where from?

J Murphy-Callaghan, Longton, Staffs

The only way to add extra Fast memory to the CDTV is by internal expansions which fit into the Agnus or 68000 chip sockets. Because there is no official way to expand memory, if your CDTV goes wrong for some unconnected reason then repair companies may turn a blind eye to the broken warranty sticker, but if you blow up your CDTV while fitting the RAM expansions it's your own fault. Get the RAM fitted by a reputable supplier, ask them for a signed statement that they fitted it, and you shouldn't have any problems with your warranty.

The Brickette will be available shortly (hopefully by the time you read this), and allows a mouse and joystick to be connected to the CDTV. ***JR***

JARGON BUSTING • JARGON BUSTING

CD-ROM – Compact Disc Read Only Memory is the latest technology in storage devices. A CD can hold over 600Mb of data, compared to around 100Mb for a hard disk and 880K for a floppy disk. The big disadvantage is that users cannot store information on a CD, only retrieve it, but this doesn't stop CD from being a potentially revolutionary medium.

Kickstart – the most basic and central part of the Amiga's operating system. These days it is held in ROM, so that it is immediately present when the machine is switched on.

ROM – Read Only Memory is used to store essential programs, such as Kickstart and many of the library routines. These do not have to be re-loaded each time the Amiga is switched on because ROM retains its contents without power.

ROM sharer - a device which will hold more than one ROM (the chip in which Kickstart is stored) and enable the user to choose which version to use.

Sample – a digital representation of a sound. A sample can be sent through a digital to analogue converter and be heard as sound. Changing the sample's playback speed changes the pitch of the sound.

Now, not everyone will agree with me on this one, but my advice is to keep this sort of thing as a very last resort. I have over 50 assorted drives in my IT suite at work, and in six years I have never cleaned one of them. They are used continuously throughout the day, and continue to function OK, despite general abuse, regular knocks and occasional spillages of coffee. ***WR***

PRINT ON A BUDGET

I have a Canon BJ-10ex printer, *Deluxe Paint III* and *Wordworth 1.1*.

I want to produce a printout that contains high quality text and music-related clip art.

As money is tight, can you suggest any PD or shareware disks? Proportional, outline (scalable) typefaces and images would be nice, though not essential.

FD O'Brien
Merseyside

The versions of *Wordworth* and *Deluxe Paint* you are using do not work with Compugraphic outline typefaces, and neither works with scalable images, or structured drawings in other words. Both utilise low resolution (75 dpi) bitmap graphics and bitmap fonts.

Wordworth 2 and *Deluxe Paint 4.1* support Compugraphic typefaces, but if you want to use structured drawings you'll need something like *PageStream*, *Professional Page* or *Professional Draw*, all of which support scalable typefaces and graphics.

There's no PD or shareware solution from the program point of view, but there are stacks of libraries and small graphics companies peddling scalable typefaces and clip art. Check out the adverts! ***JW***

FLICKERING GENLOCK

My main interest is using *Deluxe Paint IV*, particularly for animation. My problem is that I have recently purchased a RocGen Plus genlock to use with my Amiga 500 Plus. The genlock produces a very noticeable flicker and also a colour shift. I might learn to live with the latter, but not the former. I'm using lo-res mode, by the way.

People who know more than I do (which isn't difficult, as I passed my 'sell-by' date some years ago) tell me that this is par for the course. Do you agree? If so, can you suggest another genlock which will give more acceptable results? If not, is there anything which I can do to improve the present setup?

Mr B Haslam
Drumburgh
Nr Carlisle

The colour shift doesn't sound exactly right, but the flicker isn't necessarily the genlock's fault. Flickering is an inherent part of the Amiga's output, though it's usually not something which affects video unless very thin, high contrast, horizontal lines are included in the graphics. I'd also advise you to work in Interlace mode, if you can, as this can help as well.

As for the colour smearing, I presume you mean a horizontal shift which results in a furry edge on vertical edges, particularly on bright reds and full blues. Part of the problem is that video equipment (especially at this level) doesn't like strong colours. The obvious cure is to tone any really bright hues down slightly and learn to live with it. If this doesn't solve the problem complain to the supplier of the genlock, as it may not be correctly set up. When I reviewed the RocGen Plus last year I managed to improve its output by fiddling around inside it (though I don't recommend you do this), so maybe you have a duff one. ***GW***

SPEEDY CONCERNS

a) If I buy GVP's A530 processor accelerator/hard drive combination, can I still use the hard drive when the accelerator is disabled using the 68000 fall back mode?

b) Will the GVP 68030 accelerator speed up DTP programs such as *PageStream* or will they simply run at the same speed as they do on a 68000-based machine?

c) Does the Amiga 3000 have a 68000 fall back mode? Does it also have a built-in flicker fixer?

d) Is there a package available for the Amiga that will allow me to create my own outline fonts in Compugraphic format?

e) Can I use fonts from other DTP programs within *PageStream?* And can I use *PageStream* fonts in other DTP programs?

f) When I try to print a page from *PageStream* at 360 dpi, I get an 'out of memory' message. What type of RAM (Fast or Chip) do I need to solve this problem?

g) How do I install other printer drivers into *PageStream?*

h) Are high density disk drives (1.76Mb) capable of reading standard 880K Amiga floppies?

i) I know that the Amiga can handle up to four drives. Is the hard drive counted as one of these four?

j) When you partition a hard drive, are the partitions treated as separate drives or as an extension to DH0:?

Theofilos Gints
Macedonia
Greece

a) Although the processor accelerator and hard drive controller are on the same card, they are still effectively separate. So, you can continue to use the hard drive even when running in 68000 mode.

b) It certainly will. Running a DTP program on an accelerated Amiga will give you faster screen redraws, faster processing of text and graphics – faster everything in fact. A processor card is particularly useful if you own a DTP program that uses outline fonts.

c) The Amiga 3000 does not have a 68000 fall back mode but it does have a flicker fixer built in as standard (it's called the 'Display Enhancer'). Note that you'll need a multisync or VGA monitor to take advantage of this.

d) Unfortunately, there aren't any font editing programs available for the Amiga that can produce Compugraphic outline fonts. But I'm sure it's only a matter of time before someone comes up with the goods. Take my advice – keep an eye on Gold Disk...

e) The only type of outline fonts that can be used with both *ProPage* and *PageStream* are Adobe Type 1 fonts. Even then, *ProPage* cannot handle these fonts unless they have first been converted to Compugraphic format using Gold Disk's *Font Manager* program.

f) Any RAM expansion will solve your printing problems, provided that it is big enough. My guess would be that you need at least an extra 2Mb.

g) The printer drivers used by *PageStream* aren't the same as the printer drivers used by the Amiga Workbench. *PageStream* uses its own custom printer drivers which are specifically written to work with the program. If you have managed to obtain these, just copy them into *PageStream's* 'Printers' drawer and then select 'Setup Printer' from within the program.

h) In general, yes.

i) This maximum of four drives does not include hard drives.

j) As far as AmigaDOS is concerned, each partition on a hard drive is totally separate and therefore has its own device name (DH0:, DH1:, DH2: and so on). ***JH***

IT'S ALL ON TAPE

At present I back up my hard disk using *Quarterback V5*. However, this takes over 20 disks and an awfully long time. I am thinking of buying a tape streamer and have seen some advertised in PC magazines for around £150-£200. Could I purchase one of these and connect it into the SCSI port on my hard drive? Would I need a controller of any sort? The tape streamers I have seen are: Wangtek 3040F/P and Colorado Jumbo DJ10. If neither of these are suitable, could you recommend one?

Robin Davey
Billericay
Essex

Most Amiga SCSI controllers can support tape streamers (your GVP controller certainly can) but you will require a SCSI one. Most cheap PC models either have a dedicated (non-SCSI) controller card or connect to the floppy disk controller. Neither type will work with your Amiga. You will need a true SCSI tape streamer, and these are not cheap. A 250Mb SCSI model will cost between £350 and £500, rising to over £1500 for a 8Gb SCSI DAT device.

Once you've got your tape streamer, *Quarterback 5* will support the tape drive directly. ***JR***

JARGON BUSTING • JARGON BUSTING

Chip RAM – the area of the Amiga's memory directly accessible by the custom graphics and sound chips. Originally a maximum of 512K, newer machines fitted with the fatter Agnus graphics chip can access 1Mb, enabling smoother animations and more screens to be displayed at once. The new A1200 comes with an Agnus chip capable of addressing 2Mb of Chip RAM.

Flicker fixer – a device that removes the flicker from the Amiga's interlace mode and the visible scan lines in the non-interlace mode. Interlace mode is the Amiga's way of doubling the vertical screen resolution, but normally by effectively halving the screen update rate and creating a noticeable flicker.

Genlock – a way of slaving one video source to another in order to synchronise their signals. This will allow stable wipes, mixes and other effects including overlay between the two sources.

Partition – part of a hard drive separated off from the rest. As far as Workbench, AmigaDOS and the rest of the world is concerned, a partition is a disk in its own right. Speed problems do come to the fore when you try to copy data between two partitions on the same drive.

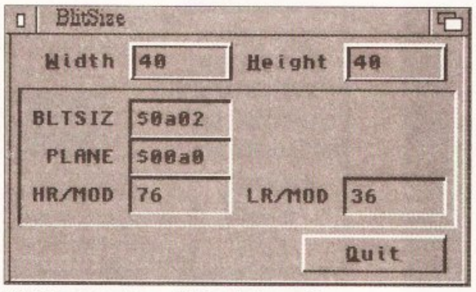
Program: BlitSize **Language:** C
Purpose: To generate programmer information for the Blitter
Author: D Harris, Swanage, Dorset

CODE CLINIC

This month, for the first time, we are dealing with a C program. The program is called **BlitSize** and is a small utility written by an assembly language programmer to display blitter information on the screen. As an aside, this is a very good example of the "right language for the right job". The programmer is obviously writing programs that make heavy use of the blitter – probably games, which are written in 68000 assembly language for speed. This simple utility, however, was quicker to write in C, and by doing so, the programmer saved himself a fair amount of time and effort.

The blitter requires a fair amount of 'magic numbers' to operate, and one of these is the 'blit size'. This value is generated from the width and height of the object to be placed onto the screen, and is the cause of large piles of paper on programmers' desks. D Harris' program attempts to automate all of this using just one window-based application, thus reducing the chance of human error.

The program (shown working in the picture) actually works fine, apart from one small visual fault. Once the X and Y values had been typed into the two string gadgets, then the correct blitter size and other information would be generated. If the user then moved a window over the blit size window and away again, two of the values would be horribly corrupted with strange characters. The program, however, never crashed, nor did it cause any of Commodore's debugging tools, such as *Enforcer*, to complain.



BlitSize provides all the information you'd like to know about the Blitter

INSTANT DIAGNOSIS

The cause of this was quite simple, and an easy mistake to make in C. The program has two string variables, **size_string** and **plane_string,** which store the values that will be printed in the appropriate boxes on the screen. These variables were declared inside the function which printed them. After the values had been printed, the function returned to the main loop.

Unfortunately, this meant that the memory in which the two strings were stored became free, and was rapidly overwritten by other functions in the program. This was fine, until the Workbench wanted to refresh the window after it had been covered by another window. It then looked at these two memory locations and printed what it found there, now meaningless data, on the screen.

The solution is just as simple: all you need to do is move the two variable declarations for **size_string** and **plane_string** to outside the function which prints them. This makes them global declarations rather than local ones. The memory for them now does not become free until the program itself is closed.

The working routine is shown in the listing immediately below. It is not the complete program source code – at around 80K, that would be too large to print here.

JARGON BUSTING • JARGON BUSTING

Enforcer – An essential tool for all serious developers, with one small catch: you need an MMU (Memory Management Unit) to use it. MMUs are standard in the 68030 and 68040 (though not the cheaper 68030EC), and are optional on the 68020. *Enforcer* traps and shows you any illegal memory operations that you may make. In C this is very useful, as one of the most common faults is referring to an incorrect pointer variable.

Blitter – An Amiga chip which copies areas of memory from one place to another very quickly. It has other functions too, such as drawing lines, but its primary use is moving graphics data to and from the screen.

User Interface – The part of a program seen and operated by the user. This includes the buttons, menus and windows of a program. If the user interface is difficult to use, then the user gets a negative first impression of what could be a very powerful and well-written program.

GHOST WRITING

The original program was interesting from one particular point of view. It's the first I have seen (other than my own programs), that uses the Commodore application *ToolMaker* to develop the user interface. Around 80% of the full application was not written by the author at all, but was in fact generated for him by *ToolMaker.* Using this handy program the author was first able to design the layout for the buttons and window for his interface. *ToolMaker* then wrote an entire program for him that opened the window, created the buttons, and then quitted. All that then needed to be written was a small amount of extra code, about 90% of which is in the routine below. Neat eh? I guess that the program took around 30 minutes to write from start to finish, including the creation of the buttons and windows.

If you're interested in finding out more about these wonderful time-saving programs, contact Commodore at the address given on page 85 of this issue. **TS**

BLITSIZE LISTING: THE SOURCE CODE

```
char size_string[128];
char plane_string[128];

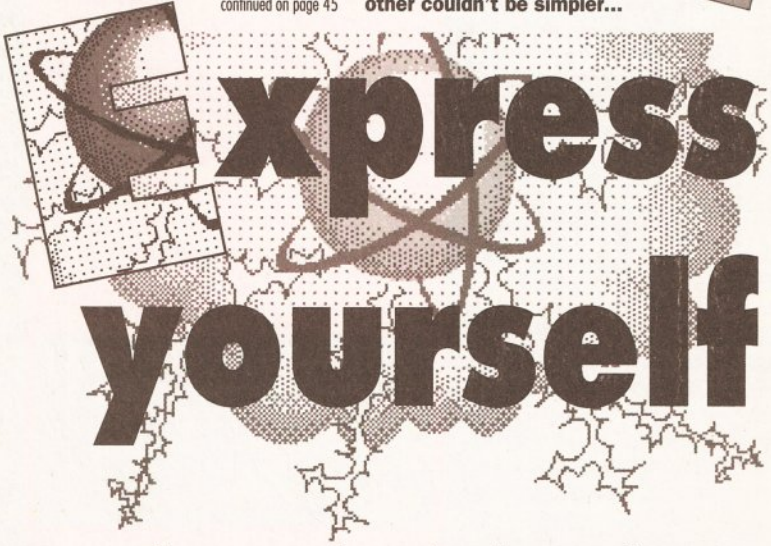
BOOL Window_BLITSIZE_GADGETUP(struct TMData *TMData, struct
IntuiMessage *imsg)
  {
  switch(((struct Gadget *)imsg->IAddress)->GadgetID)
    {
    case ID_QUIT:      /* Quit */
      return TRUE;
      break;

    case ID_WIDTH:     /* Width */
      x_width = ((struct StringInfo *)gadget_WIDTH-
>SpecialInfo)->LongInt;
      x_width = x_width/16;
      ActivateGadget(gadget_HEIGHT, window_BLITSIZE, NULL);
      break;

    case ID_HEIGHT:    /* Height */
      y_height = ((struct StringInfo *)gadget_HEIGHT-
>SpecialInfo)->LongInt;
      lo_mod = 40 - (x_width*2);
      hi_mod = 80 - (x_width*2);
      planesize = (x_width*2)*y_height;
      blitsize = ((y_height & 0x3ff)*64) + (x_width & 0x3f);

      /* Display the new information */
      GT_SetGadgetAttrs(gadget_LRMOD, window_BLITSIZE, NULL,
        GTNM_Number, lo_mod, TAG_DONE);
      GT_SetGadgetAttrs(gadget_HRMOD, window_BLITSIZE, NULL,
        GTNM_Number, hi_mod, TAG_DONE);
      sprintf(plane_string, "$%04x", planesize);
      sprintf(size_string, "$%04x", blitsize);
      GT_SetGadgetAttrs(gadget_PLANE, window_BLITSIZE, NULL,
        GTTX_Text, plane_string, TAG_DONE);
      GT_SetGadgetAttrs(gadget_BLTSIZE, window_BLITSIZE, NULL,
        GTTX_Text, size_string, TAG_DONE);

      ActivateGadget(gadget_WIDTH, window_BLITSIZE, NULL);
      break;
    }
  return(FALSE);
  }
```

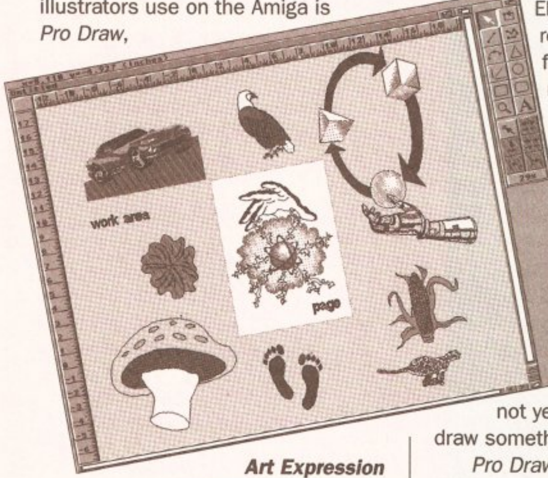


From the people who brought you *PageStream* comes *Art Expression* – a top-flight professional illustrator program. Jeff Walker draws his own conclusions

Despite program names and advertisement claims, there's never been a truly professional structured drawing program for the Amiga, or 'illustrator' as the genre has become known. By 'truly professional', I mean something that a Macintosh artist would look at and exclaim, "I wish they did that for the Mac!"

The first attempt was *Aegis Draw*, which never really made it in this country, although it was popular in the States and is still widely used in Europe, though mainly for computer aided design rather than for desktop publishing.

The package that most UK illustrators use on the Amiga is *Pro Draw*, simply because it is the most widely available. The latest version (3.0) is very powerful considering its inexpensive price tag, but it will only run from hard drive, so those on a tight budget cannot afford it.



***Art Expression* enables you to define both the size of the page and the size of your work area, enabling you to have a sizeable 'artboard' to which you can temporarily 'pin' drawings until you want them**

ProVector promised to be 'the' illustrator for the Amiga, but it ended up falling short in the professional features department, and has a quirky user interface that is often more of a hindrance than a help. But at least a PostScript module is available, albeit at extra cost, so that standard Encapsulated PostScript files can be imported, edited and exported, making it possible to bring work files home at nights and weekends from your office Mac or PC, continue to work on them on your Amiga, then take them back to work to load back into the Mac or PC. But *ProVector* is expensive and does take some getting used to.

ESTABLISHED STANDARDS

The cheapest Amiga structured drawing package is *Expert Draw*. It lacks powerful features, so it can't really be classed as an 'illustrator', but it runs quite quickly, so is more usable on a unaccelerated machine. *Expert Draw* is to structured drawing what *PageSetter 3* is to DTP – an inexpensive, easy-to-learn introduction to the subject.

I don't think there are many professionals who would argue with me saying that the industry standard structured drawing package is *Adobe Illustrator* on the Macintosh. Because of this, the format in which *Adobe Illustrator* files are saved – a variation of PostScript – has also become a standard, probably as popular a standard as Encapsulated PostScript (EPS) format.

A professional Amiga structured drawing package needs to support *Adobe Illustrator* and/or EPS file formats for two reasons: first, so that files are portable across machines and packages; second, because there is a wealth of clip art available in those formats, thus opening the door to part-time artists who know enough to able to alter someone else's work to create a 'new' drawing, but are not yet quite skilled enough to draw something from scratch.

Pro Draw, which employs its own 'clip' format for drawings, will import and export EPS, but will not display or allow you to edit the drawings, and can only print them to PostScript devices. *ProVector* by default uses the Amiga standard IFF-DR2D drawing format, but its PostScript module will import and export EPS images, display them and let you edit them freely. But it does not directly support PostScript Type 1 typefaces, nor *Adobe Illustrator* format.

So, there is a little hole in the market. Or rather, there was.

FILER FACTS

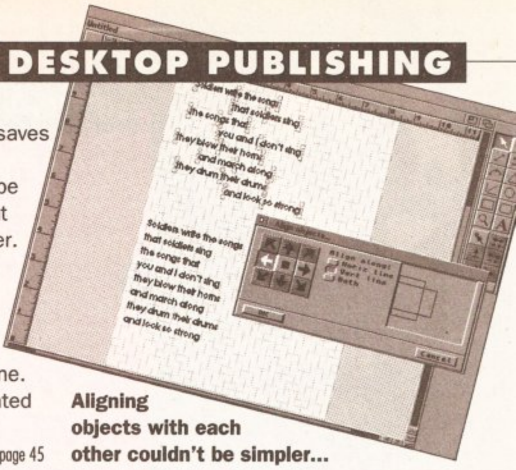
An illustrator is a natural partner to a desktop publishing program, so it was an obvious progression for Soft-Logik, the *PageStream* people, to develop *Art Expression*.

PageStream has been able to import EPS and *Adobe Illustrator* file formats for some time, but although you are able to edit *Adobe Illustrator* drawings that have been imported into *PageStream*, on-screen colour handling is not good and there is no way to save them except as *PageStream* documents.

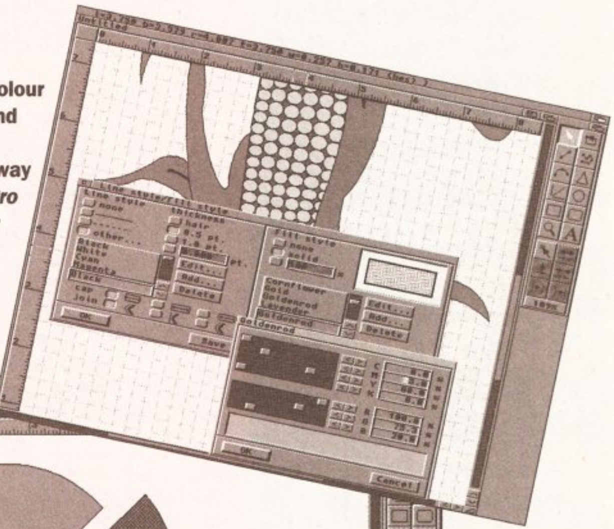
The portability of the files *Art Expression* exports may be the major factor when deciding to buy it or not. The files it creates have to be compatible with other DTP software you are using – on the Amiga certainly, and possibly on a PC or a Mac as well.

By default *Art Expression* saves documents in Encapsulated PostScript format. These can be imported into any package that supports EPS, on any computer. As a test I ran some complex *Art Expression* documents through the *SaxonScript Professional* PostScript interpreter, and they printed fine. *PageStream* imported and printed

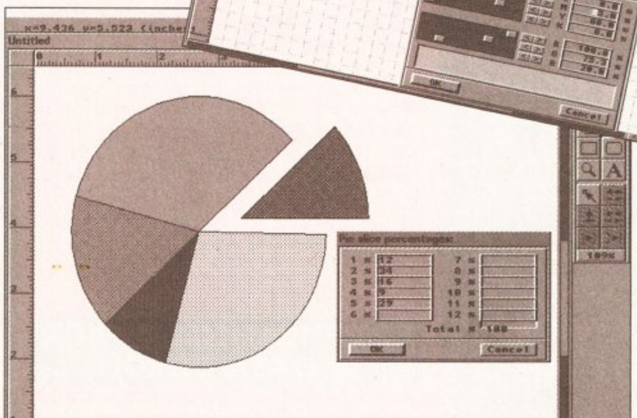
continued on page 45



Aligning objects with each other couldn't be simpler...



***Art Expression's* colour support is good, and works in almost exactly the same way as rival package *Pro Draw*, using colour dithering to approximate thousands of colours on-screen**



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them fine, so did *Wordworth 2*. The PostScript Import module of *ProVector* also accepted them happily, all of this being proof enough for me that *Art Expression* files are indeed EPS format. However *Art Expression* cannot import and display EPS files created with other packages; it'll import them, but you get the infamous crossed-out rectangle that can be scaled and rotated and saved as part of another EPS file, and can only printed to a PostScript device.

Gold Disk's *Pro Page 3* and *Pro Draw 3* also accepted *Art Expression* documents as EPS files, but when sent to a PostScript device some of the shades printed incorrectly, and one area that had been blended came out as a single shade of grey. I can't say for sure, but considering that packages from three other companies handled them correctly, this would appear to be a bug or a badly-implemented routine in Gold Disk's PostScript output.

FURTHER FORMATS

Art Expression pages, drawings, groups of drawings, or any part of a drawing, can be exported in two other standard file formats, DR2D or *Illustrator88*.

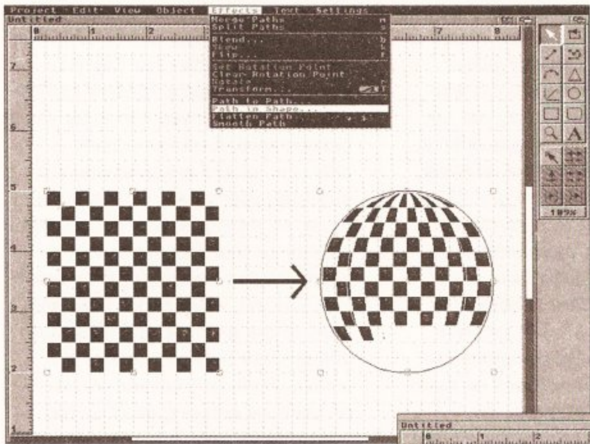
DR2D is the Commodore-adopted Interchange File Format (IFF) standard for structured drawings – as ILBM is to Amiga bitmaps and 8SVX is to Amiga sound samples, so DR2D is to Amiga structured drawings. Any Amiga package that imports structured drawings should, in a perfect world, be able to import DR2D; but alas, the Gold Disk DTP products – *Pro Page, Pro Draw* and *PageSetter* – support only Gold Disk's 'clip' format as produced by *Pro Draw*.

Illustrator88 is a file format saved by *Adobe Illustrator*. It's an old version of the file format, so certain structured drawing features of the latest versions of *Adobe Illustrator* (3.x/4) are not supported. This will cause problems with importing certain types of graphics, and is one reason why Gold Disk prefers to stick to its own 'clip' format. Soft-Logik says that it is working on *Illustrator* 3.x/4 format for both *Art Expression* and *PageStream* and will switch to it in the future.

The DR2D file format is itself quite limited – another reason why Gold Disk prefers to stick to its own 'clip' format – and Soft-Logik is currently working to propose a new DR2D standard that will have every feature handled by PostScript.

A TOUCH OF PAINT

Drawings can also be exported as IFF-ILBM files should you feel the need to import your work into a normal bitmap painting program, like *Deluxe Paint* for example. It's possible to turn the bitmap back into a structured drawing afterwards by using the 'Trace' feature of the supplied *BME* utility (BitMap Editor), but you will always sacrifice quality in doing so. I'll be telling you more



Above: Warping objects into shapes is one of *Art Expression's* most powerful features. At a higher magnification you would see that the pattern is all there in the circle Right: Text can be warped into any shape, just as objects can

about auto-tracing bitmaps a little later in the review.

WORDS AS WELL

The typeface format supported is PostScript Type 1. Period.

Soft-Logik's 'Reviewer's Notes' point out that *Art Expression* is a PostScript illustration program, so supporting the Compugraphic typeface format is not sensible. I guess they were worried that some people might be concerned that the program does not support the Amiga scalable typeface standard, but I for one am in complete agreement with the Type 1 standpoint because PostScript is the desktop publishing industry standard, and this must take precedence.

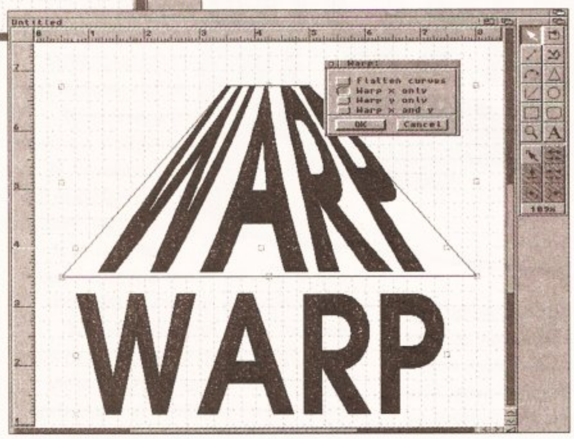
The full package of the 'Classic 35' PostScript typefaces is provided with *Art Expression* – that is, the 35 typefaces that many PostScript laser printers have built-in – and these may also be used with *PageStream* or any other package that supports the PostScript Type 1 format.

THE RIGHT TYPE

The *FontManager* utility that comes with *Pro Page, Pro Draw* and *PageSetter* will happily convert these typefaces to Gold Disk's Compugraphic format; and *Fountain* can then install them as Amiga Compugraphic format should you want to use them with any program that supports Compugraphic typefaces. Soft-Logik will be releasing a package called *TypeSmith*, a typeface editor that will be able to convert between Compugraphic and PostScript formats. (This is actually the *FontDesigner* program from BSC in Germany that I was wittering on about here some months ago.)

Words are placed on the page by means of a requester that allows you to select the typeface and the point size, which may be asymmetrically scaled. Any size from 0.01pt to 183,000pt can be specified.

The text which is to be placed on the page is typed into a small gadget. Up to



127 characters can be entered, but they all have to be on one line. If several lines of text are required you will have to enter and place them separately. This is the way rival package *Pro Draw* used to do it, although even that old version of the program had some control codes to force carriage returns; these days, no doubt in response to requests from users, *Pro Draw* allows you to type text directly on to the page in much the same way *PageStream* does.

Soft-Logik is perhaps guilty of double standards here – on one hand the company makes a big noise about the way text can be typed directly on to a *PageStream* page, which is one of the features that *PageStream* users adore, yet on the other hand it says that a single line of up to 127 characters should be sufficient for most illustration applications.

Yeah, OK, it "should be". But if it isn't, tough.

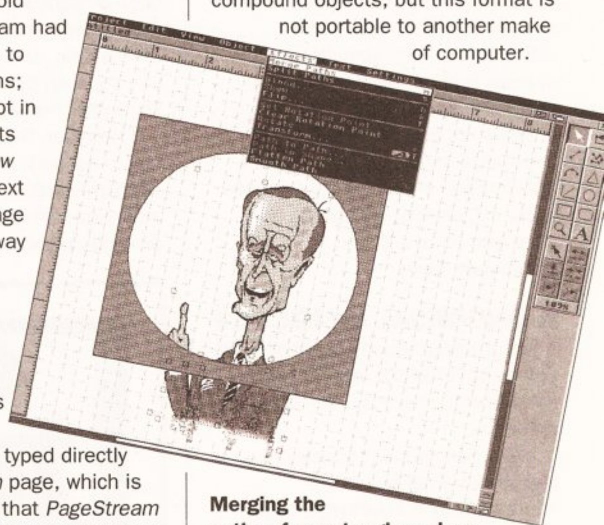
Text is handled in two ways. After placing it on the page it remains a text object that can be edited by using that requester again. Handles around the edge of the bounding box enable you to scale the text by hand, plus you can flip and rotate it. After scaling, rotating and flipping the text remains completely editable, even to the point of changing the typeface.

ONE-WAY CONVERSION

If you want to do anything more drastic to the text, a special effect like skewing or blending for example, then the text object first has to be converted to a graphic. Now, once it is a graphic, you can't convert it back to a text object, and there are good reasons why you may want it to remain a text object. You see, as a text object it gets saved in the file as a string of text and instructions as to what typeface to use, in what size, colour and so on. So when the illustration is imported the typeface information is retrieved separately from disk. The result is perfect Type 1 typefaces.

But as a graphic it will almost certainly contain merged paths – every letter that has a 'hole' in it somewhere, A P Q O R for example, is composed of merged paths. To put it another way, it is a 'compound object'. And *Illustrator88* format does not support compound objects, so graphics with holes in them will import without the holes.

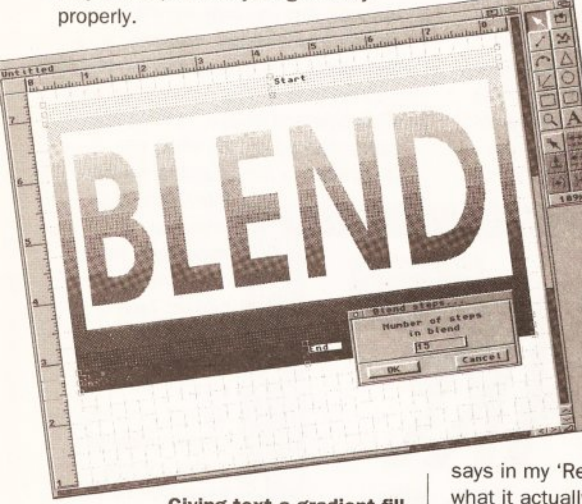
DR2D format does support compound objects, but this format is not portable to another make of computer.



Merging the paths of a rectangle and an ellipse creates a compound object with a hole in it that can become a frame for ol' "Read My Lips"

As Soft-Logik has pointed out to me, this is a file format problem that is not entirely in its developers' own hands to solve. When they've implemented the newer *Illustrator*

3.x/4 format, the specification for which was only released just as *Art Expression* itself was being released, it will no longer be a concern. For the moment, any illustration that contains compound objects is best saved as an *Art Expression* EPS file if it is to be re-imported into *Art Expression*, or exported as IFF-DR2D if it is to be imported into *PageStream*. The latest *PageStream* DR2D import module (2.1.9) handles *Art Expression* DR2D files perfectly, earlier versions of the DR2D module may not import everything entirely properly.



Giving text a gradient fill is a slightly complex task of creating a compound object mask to place over a blended area. The manual describes the technique quite well, and a little experimentation will go a long way

Some readers may feel that another solution would perhaps have been to implement Gold Disk's 'clip' format, but again this is not portable across different makes of computer, and, as Gold Disk has never released the 'clip' specification, support for that file format will of necessity have to be reverse engineered, and therefore be somewhat imperfect. *PageStream*, for example, imports most *Pro Draw* clips, but sometimes screws up when you try to edit and/or manipulate them.

A UNIVERSAL LANGUAGE

A better Amiga-specific solution is an enhanced IFF-DR2D format, which, as I mentioned earlier, Soft-Logik is proposing.

One further solution would be to implement a full-blooded interpretation of PostScript, thus allowing EPS files to be imported, displayed and edited, but this is a very time-consuming and memory-hungry operation. Those readers who are calling for displayable and editable EPS files in DTP software are not living in the real world. If the Amiga ever gets itself a PostScript screen display (like NeXT machines), perhaps we'll be in business, but even then, for reasons of speed, this is only going to be practicable with at least a 68040 processor.

TOOLED UP FOR ACTION

Feature-wise *Art Expression* has all the usual illustrator tools for drawing and editing lines, boxes, ellipses and paths. Points can be easily added to paths, or deleted, split or joined.

If you are not used to the way illustration programs work, you are bound to find the technique difficult at first. Like all skills, it requires practice, but *Art Expression* is no more difficult to master than any other illustrator.

The program was designed and developed by Scott Anthony, an accomplished San Francisco artist, which means that the needs of artists have been considered at every step in its creation. Well, that's what it says in my 'Reviewer's Notes', but what it actually means is that the needs of Scott Anthony and his mates have been considered at every step. I'm not complaining, merely pointing out that there is more than one way to skin a cat – any argument about which way is better is simply a matter of personal preference.

There's not a lot wrong with the way *Art Expression* does things. Most operations work the way you expect them to, and the user interface has been designed so that beginners can use buttons and requesters and the on-line help, and experienced users can crack on by using the many keyboard short-cuts.

However, there is no built-in macro support, and ARexx is not supported either, so creating automated time-saving, customised drawing operations is not possible. This omission will only be of concern to technically minded users, and perhaps Soft-Logik left it out so as not to frighten off beginners who might be blinded by the appliance of science. Nevertheless, to 'power users' the omission of ARexx support is almost unforgivable these days.

Full control over colour definition is provided in either the CMYK or RGB colour systems. Sliders can be set by mouse, or you can enter exact percentages. A million slightly different colours are possible, but obviously you cannot display all of them, so *Art Expression* dithers the colours so that thousands can be approximated on-screen. They won't look like this when printed, but the point of the exercise is so you can differentiate between colours on-screen. Professionals will almost certainly be entering exact CMYK percentages from a colour chart, so there's no absolute need to see an exact colour on-screen. Colour palettes can be saved separately, allowing you to build up databases of different CMYK colour charts.

Although *Art Expression* works on the 1200 and 4000, it does not yet take advantage of the new AGA screen modes, so the on-screen colour palette is limited to 16 colours, and all possible dither patterns of those colours.

FILLING THEM IN

Percentage fills or 'tints' are supported. For example, selecting the colour Red and specifying 50% results in a shade of pink. Shades of grey can be similarly created by specifying percentages of solid black. Neither the *Illustrator88* nor the DR2D file format supports percentage fills, so each tint gets written out as a separate colour, and will be imported as something odd like 'UnnamedF7000000'. This state of affairs will (once again) be sorted out in the latest *Illustrator* and/or newly proposed DR2D file formats.

Many special effects are possible using the tools provided in the 'Effects' menu. Paths can be merged to create compound objects, the most obvious use of which is to create objects with see-through 'holes' in them. Objects or groups of objects can be skewed and flipped, or rotated to any angle; a Transform feature enables you to duplicate, scale and rotate an object or group any number of times.

It doesn't do gradient fills. Instead *Art Expression* has a 'Blend' feature – while it is possible to reproduce any gradient effect (and more) using blends, the masking technique takes a little getting used to and can be a bit fiddly at times. Once again, the main reason for *Art Expression* implementing blends instead of gradient fills is that the Illustrator and DR2D formats don't support gradient fills.

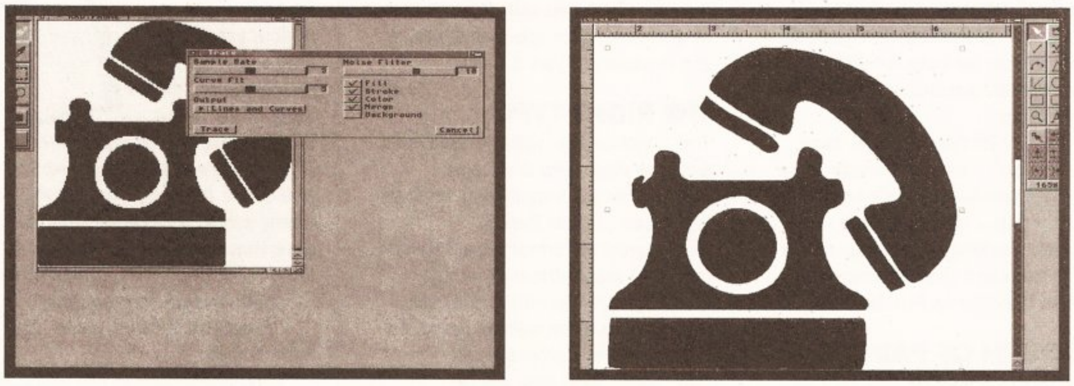
(*Pro Draw* and *Pro Page* users may by now have realised why Gold Disk invented, and sticks to, its own 'clip' format.)

A DISTORTED VIEW

Perspective or distortion effects are achieved by 'filling' a shape with an object, a technique called 'warping'. If you've ever used the 'Wrap' feature in *Deluxe Paint*, you'll know exactly what I mean. For instance, it's possible to draw a circle and then warp some text into the circle so that it looks like it has been wrapped around a hemisphere.

Objects, as well as text, can be warped into any shape you like. However I've had mixed results warping groups of objects. Sometimes it works, sometimes it doesn't. The pattern seems to be that the more complex the drawing, the less chance that warp will work. A little undocumented feature there for Soft-Logik to work on.

But all things considered, *Art Expression's* drawing tools are well up to the job, with options to flatten and smooth paths, and to join two points together – useful features that are lacking in *Pro Draw*. There's even an automatic pie chart creator.



The auto-trace feature of *BME* (*Art Expression's* Bitmap Editor) may come in handy for creating structured versions of simple bitmap clip art, but don't expect perfect results – there's always a loss in quality

Earlier I mentioned the auto-trace feature, which is able to turn a bitmapped graphic into a structured drawing. This facility is provided as part of the *BME* program – the BitMap Editor that also comes with *Hotlinks Editions*. It'll trace any bitmap, no matter how many colours it contains or how complex it is, but in practice it is only sensible to trace simple pictures with few colours.

Various options give you control over the accuracy of the trace, but you shouldn't expect great results, even at the highest accuracy. Converting a bitmap to vectors is an inexact science. It takes time, and the results are almost always not worth the wait. You may find it useful while you are learning how to draw using *Art Expression*.

The trace facility is the only reason *BME* is included with *Art Expression*, although you may also find it handy for cropping bitmaps for later use in *PageStream*.

A CHOICE OF OUTPUT

Art Expression handles printing via Preferences in the normal Amiga way. There are no program-specific printer drivers, à la *PageStream*. Also there is no print set-up required within *Art Expression* itself, apart from the option of specifying which part of the page to print, as opposed to the whole page. All printer settings are selected via Workbench Printer and PrinterGfx preferences.

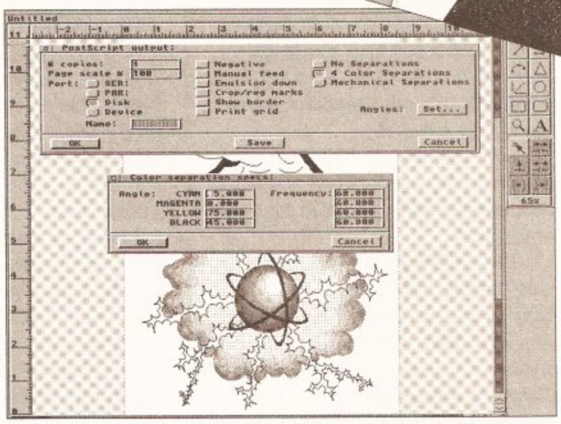
Now, I had problems printing to Preferences with version 1.00 of *Art Expression* – the output was too large and the aspect ratio was wrong. Soft-Logik sent me version 1.01, which supposedly fixed this bug, but now my 500, 2000 and 3000 all crash when attempting to print via Preferences from *Art Expression*. Soft-Logik says that some five per cent of users have reported that this happens with 1.01; the rest seem to be fine.

Although at first this Preferences printing problem may seem severe, I see *Art Expression* being used by two kinds of users – professionals who will be more concerned with PostScript output, and *PageStream* users who will be more concerned with being able to export their drawings and import them into *PageStream*. Neither kind of user absolutely requires *Art Expression* to print to Preferences printers, so the problem can be worked around until Soft-Logik sorts it out.

Version 1.02 should be released by the time you read this, and everyone who returns the registration card will get a free upgrade to 1.02, along with a Bonus Disk containing seven more PostScript typefaces. Let's hope the printing bug is quickly tracked down and stamped on.

Art Expression naturally gives you full control over PostScript output, which can be to SER:, PAR:, disk or another named device.

Four-colour separations are possible; screen angles and frequencies can be adjusted in 0.0001 degree/lpi increments; page scale, negative, emulsion down and crop/registration marks can all be selected. There's no rotation gadget, so you'll have to do this by hand and adjust your page size accordingly if necessary.



***Art Expression's* PostScript output options are fairly comprehensive, and good enough for most needs**

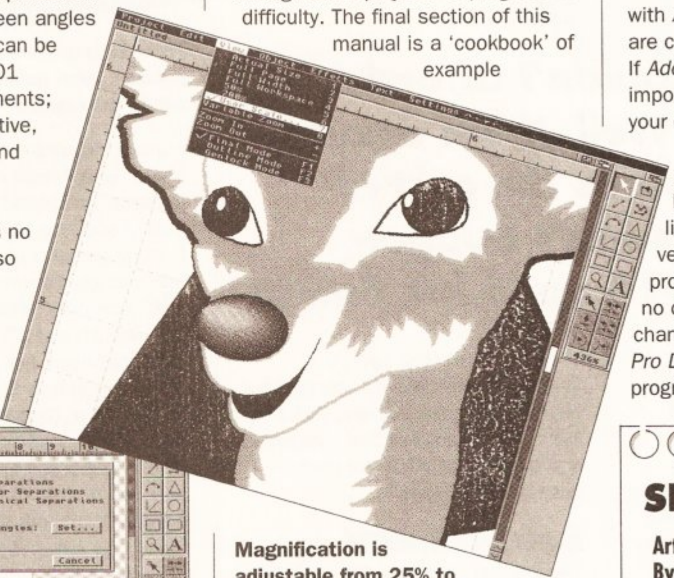
The separations are saved in one file, and there's no option to save each separately.

Mechanical or 'spot' colour separations are also catered for.

The manual goes into some detail about PostScript printing, explaining about resident fonts, downloaded fonts, screen angles and frequencies, separations, and some of the limitations and known pitfalls of PostScript.

MANUAL ASSISTANCE

There are three manuals provided with the package. The two *Art Expression* manuals are spiral bound, so they fold flat easily, and they are extremely well written. The 'Lessons' manual gently introduces you to the subject, and takes you through three projects of progressive difficulty. The final section of this manual is a 'cookbook' of example drawings with a step-by-step guide to how each drawing was created.

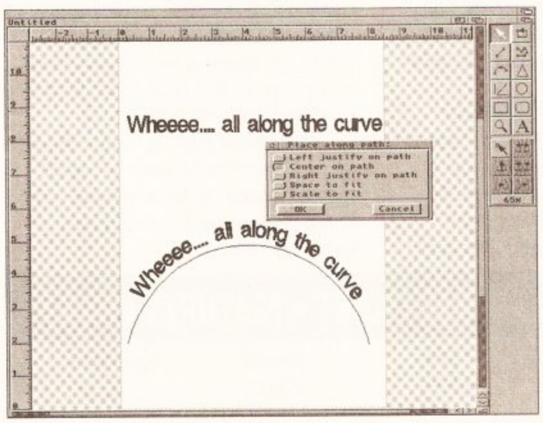


Magnification is adjustable from 25% to 3200%, with several preset zoom levels, just like in *PageStream*. Note the 'Outline Mode' menu entry, which saves having to wait for line weights to draw and shapes to fill

After working your way through the 'Lessons' manual you are ready to dip into the main 'User' manual, which is overflowing with examples of every feature from drawing a line to masking a compound object in order to create a blend. Structured drawing is made a lot easier to learn thanks to the effort Soft-Logik has put into the manuals.

The third manual is the one for *BME*, although the documentation for the auto-trace feature come in an 8-page loose-leaf addendum.

Art Expression is certainly a competent illustration program and makes a good companion to *PageStream*. An extra program is supplied that will convert *Pro Draw* 'clips' into IFF-DR2D format, so unhappy *Pro Draw* users, if there are any, will be able change brands without too much pain. But keep in mind that the DR2D format doesn't support some of the advanced 'clip' format features – gradient fills and percentage fills being the most notable – so not all *Pro Draw* clips will convert properly.



Text can be quickly aligned with any path or curve

LUCK OF THE DRAW?

If it's a question of choosing between *Pro Draw* and *Art Expression*, the deciding factor will probably be whether you are using a Gold Disk or Soft-Logik DTP package in conjunction with it. *PageStream* users will feel much more at home with *Art Expression*, *Pro Page* users are certainly better off with *Pro Draw*. If *Adobe Illustrator* compatibility is important to you, *Art Expression* is your only choice.

Art Expression is by no means perfect, but it's early days yet. It shows great promise and is light years better than the first version of *Pro Draw* was. The program will get better and better, no doubt about it, and has every chance of quickly taking over from *Pro Draw* as the stock illustration program for the Amiga. AS

SHOPPING LIST

Art Expression £150
By: Soft-Logik Publishing Ltd
☎ 0628 784006

Available from:
HB Marketing
☎ 0753 686000

CHECKOUT Art Expression

Ease of Use ●●●●○
The interface is well designed. It both helps the beginner and enables the expert to crack on more quickly.

Features ●●●○○
There's plenty in there, but lots of room for improvement with regard to AGA support, better export file formats, and some sort of macro system.

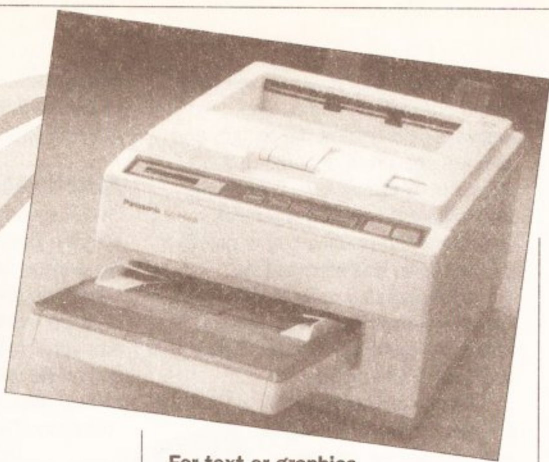
Documentation ●●●●○
Superb manuals. One or two areas could perhaps do with more explanation, but then Soft-Logik would run the risk of blinding beginners with science.

Price Value ●●●○○
With *Pro Draw 3* now selling at a discounted price of around £70, *Art Expression* is twice as expensive. But then you do get 35 PostScript Type 1 typefaces thrown in, a package that would normally cost you more than £100 on its own!

Overall rating ●●●○○

Every bit as good as *Pro Draw* in its own way. There are things each package can do that the other can't, but the deciding factor is probably that 'twice as much' price tag. Ouch!

Lasers to stun



For text or graphics printing, laser quality is now well within the reach of the home user

Thought you couldn't afford a laser printer? Well, think again! Jeff Walker counts the cost of hooking Panasonic's budget-priced KX-P4410 up to his Amiga

A laser printer is a laser printer is a laser printer, isn't it? Well, at least that's the impression you're left with if you believe everything you read in the adverts.

But there are subtle differences that make some laser printers better than others. Not just in the speed, typefaces, resolution and accessories departments, but also in actual print quality, which depends upon the drum, toner and print mechanism itself.

That's why, for laser printers that on the face of it seem fairly similar, prices can range from about £500 to £2000 or more.

The Panasonic KX-P4410 is a low-priced laser printer. While its recommended retail price (£992) appears quite high, its actual 'street price' is much less – just under £500 – putting it well and truly in the 'budget' class of laser printers.

It comes with 512K of internal memory, which is fine for your basic word processing needs, using the printer's internal typefaces. But if you want to desktop publish or print graphics on to A4 pages, you'll need at least another megabyte of memory. The RAM motherboard fitted with 1Mb of memory will cost about £130, and further memory modules (the board will take up to 4Mb) should cost about £30 per megabyte. Thanks to the drowning pound, RAM prices are fluctuating all over the place at the moment, so it's difficult to be precise. And it pays to shop around; I rang several suppliers. The highest I was quoted for KX-P4410 memory was £153 for the motherboard and first megabyte, and a whopping £120 for each subsequent megabyte.

BUILT-IN BENEFITS

The internal typefaces are good old fixed-width Courier and the proportional Century – normal, bold and italic versions of both. Courier can be printed in 6 point, 7.2pt, 8pt, 10pt and 12pt, although the three small sizes don't have a bold style and the smallest doesn't have italics either. Century (normal, italic and bold) comes in 10pt only.

Although the KX-P4410 has a Hewlett-Packard LaserJet IIP emulation, there are no HP typefaces provided, so in this mode everything gets printed in the default typeface, Courier. In Panasonic LP mode, which is essentially HP IIP emulation with a few extras, you can get at all sizes and styles of both Century and Courier. I tested it without a problem in text-only mode with *Protext 5.5* and that program's KX-P4420 driver. With *Wordworth 2* and the standard EpsonQ printer driver it worked fine in text-only mode except that I kept getting a blank page before and after the actual page of text.

For printing graphics you can leave it in Panasonic LP mode and use the HP_LaserJet driver. Top resolution is 300 dots per inch. As well as the obvious art programs (*Deluxe Paint* for example), graphics printing includes any application that prints using Amiga bitmap fonts, Compugraphic typefaces or any other kind of scalable 'outline' typeface. Printing graphics and scalable text takes longer than text-only ('printer font') printouts, and waits of between 15 and 30 minutes per page, or longer, will not be unusual for output from programs such as *PageStream, PageSetter, Pro Page, Wordworth, Final Copy* and the like. How long it takes to print a page depends on how many different scalable typefaces and point sizes have to be calculated.

And don't forget that you'll need a 1Mb printer memory upgrade to be able to print A4 pages from this type of program.

The KX-P4410 is not a PostScript laser printer, and there is no PostScript upgrade that can be fitted at a later date. If PostScript is important to you, it might be wiser to plump for a laser printer that can have a PostScript 'card' fitted should you decide you want it.

RUNNING COSTS

Once a page has been 'imaged' by the KX-P4410 it can be duplicated any number of times at a rate of five pages per minute. The cassette holds about 100 pages of normal thickness paper and can take A4, US Letter, US Legal and Executive size sheets. A number of standard sized envelopes can also be fed in via the cassette, or it'll take a fair number of standard sheets of laser printer labels (including a lot of Avery ones) and some makes of 3M and Scotch overhead projection film.

Apart from printing media there is the cost of three other kinds of 'consumables' to bear in mind – the printer toner, the drum and the developer unit.

The toner lasts for about 3,000 'normal' printouts (pages of text, that is); for heavy graphics printing that could drop to as few as 1,000 printouts or less, depending on how dark your pictures are. There's a print density dial on the side of the printer that enables you to control how much toner is being used. Toner refills cost about £20.

The drum will have to be replaced on average every 12,000 normal printouts; that currently costs about £70. The developer unit will last for 90,000 normal printouts, at which time it'll cost you about £80 (at current prices) to replace it.

I SPY WITH MY DPI

Print quality is not the best you'll ever see from a laser printer, but then this is a 'budget' model so you can't expect the earth. Text printouts are fine, using either the internal typefaces or scalable typefaces. You'd be hard pushed to tell the KX-P4410's text output from that of any other 300 dpi laser printer. Graphics output, however, which depends on dither patterns to simulate colours and shades of grey, is a bit coarse, and this is because the dots of toner that it puts on the page are a little on the large size compared to some higher quality lasers.

That's not to say the graphics output is bad – far from it. I'm merely pointing out that it is possible to get better output, even at 300 dpi, provided you are prepared to pay a little more. The KX-P4430 model for example, which costs about £300 more (at street prices), has a feature called 'Satinprint' that enhances the output. Comparing the KX-P4410's graphics output with a friend's Epson EPL-7500 300 dpi output makes the Panasonic look poor. But then the EPL-7500 does cost twice as much as the KX-P4410! AS

SHOPPING LIST

Panasonic KX-P4410........ £499.99
Available from:
Indi Direct Mail
☎ 0543 419999

CHECKOUT KX-P4410

Features	●●●○○
Print Quality	●●●●●
Speed	●●●●○
Value	●●●○○
Overall rating	●●●●○

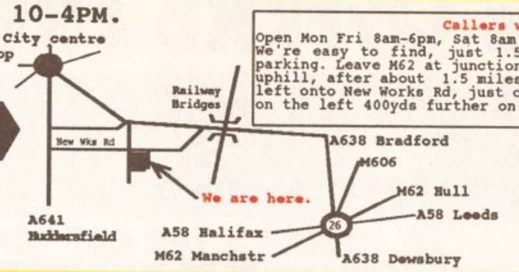
FEATURES CHART • FEATURES CHART • FEATURES CHART • FEATURES CHART

Model	Supplier	Memory	Expanded	DPI	Speed	Typefaces
KX-P4410	Panasonic	512K	4.5Mb	300	5 ppm	2

Emulations: HP LaserJet IIP, Diablo 630, Epson FX-86e/800, IBM Proprinter II, Panasonic KX-P1180.

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Conducting an inquiry

There's nothing more annoying than a misbehaving MIDI message. Paul Overaa talks you through the process of tracking down those elusive musical misdemeanors

As a communications system MIDI is pretty much trouble free. But snags can arise from time to time and, particularly for beginners, it can be difficult to figure out what's gone wrong. You might, for instance, have connected up a couple of leads the wrong way around, or are perhaps using a MIDI lead that is broken inside. On the other hand, your synth, due to the way it has been set up, may not be transmitting the messages that you think it is.

The key to solving most MIDI problems is to go about it in a methodical way: ask yourself which faults could fit the known facts, and then try to find ways of eliminating each one from your investigations. If you tackle these things from the data source and trace your way along in a logical fashion, it usually doesn't take more than a few minutes to come up with the right answers. For sequencer-transmitted data you might start at the Amiga end of the set-up. This usually poses the question: how can you tell whether the Amiga's serial port is transmitting anything? An indicator light on the MIDI interface can provide a useful clue. If not, perhaps your synth has a light which flashes as data is received.

As with most things, a bit of common sense goes a long way in MIDI fault-finding. Of course, it does pay to start by considering those things which, from past experience, seem likely candidates. If, say, your synthesiser triggers the sequencer when you are recording but on replay data does not come back to your synth, then there is a good chance that either the lead connecting your interface's MIDI OUT to your synthesiser's MIDI IN is faulty, or that your synth is set to a channel number which is different to that which the sequencer is transmitting on.

FOLLOW THE LEAD

So, your first instinct should always be to check these obvious things first, making sure that the correct MIDI sockets have been used, and also that the connectors have been properly pushed in. If the connectors on the lead look OK then you should, having eliminated all other alternatives, be led to the conclusion that the lead probably has an internal break in it somewhere. So, a reasonable next step would be to swap the suspect lead for another one. The object of this exercise is to prove (by eliminating the fault) that the connecting lead was to blame, or to prove that the fault lies elsewhere (by showing that changing leads made no difference).

FURTHER DIAGNOSIS

These common sense arguments will usually lead you to the right conclusions very quickly, but sometimes a problem may not be quite so easy to solve. You may find yourself using particular types of MIDI messages which appear to be having no effect – in this case you often need to be able to determine whether the appropriate messages are being transmitted in the first place. Now if you know a bit of BASIC, C or some other computer language, it is actually quite easy to write your own MIDI diagnostic programs for identifying the various message types being passed through the MIDI system. Of course, the trouble with this is that you cannot use your Amiga as a diagnostic tool while using it as a sequencer at the same time – because the Amiga only has one serial port.

Now, you could get another Amiga for this – but a far cheaper solution would be a separate MIDI diagnostic device that you can use at the same time as your Amiga sequencer. The one I use is called the MA36 and it is made by a company called StudioMaster, which is probably best known for its audio mixing desks.

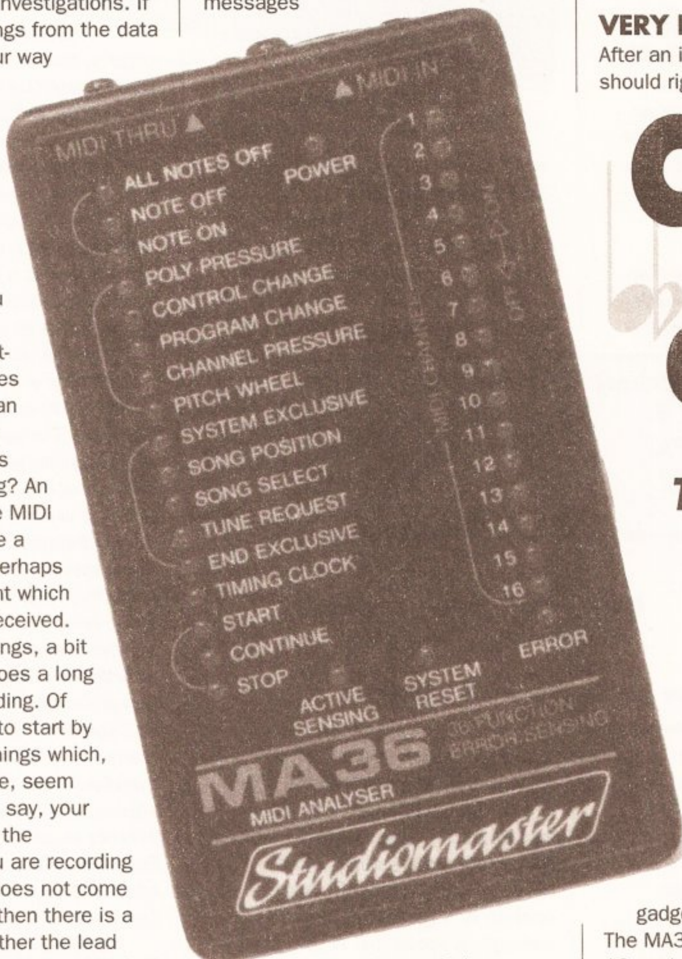
The MA36 is not a new device but it is still not particularly well-known outside serious MIDI circles. And from the letters I get about MIDI fault-finding it is clear that a lot of MIDI users could benefit from a device like this – I can tell you quite truthfully that I've been using my unit almost daily for years. It's as invaluable today as it was when I first bought it – if, as a new MIDI user, you were to ask me what I considered the most important first MIDI extra to add to a basic MIDI set-up – I'd say an MA36.

VERY ILLUMINATING

After an introduction like that, you should rightly be curious about this gadget, so here are some details. The MA36 measures about 7 cm by 12 cm by 3 cm, has an on/off switch, can be powered by a battery or mains adaptor, and, most important of all, has two MIDI sockets: MIDI IN and MIDI THRU.

As MIDI data passes through the unit the MA36 identifies the messages and displays the results on a set of LEDs situated on its front panel. The right-hand side of the MA36 display is a bank of channel indicators – these enable you to tell immediately what MIDI channels are being used. The left-hand side of the display provides details of the message types being received, so if, for instance, you want to know whether the MIDI data that is supposed to be going into your synthesiser is really there, you just take the lead out of your synthesiser's MIDI IN terminal, and plug it into the MA36. If the data is there you'll instantly see what messages are being transmitted and any associated channel numbers.

To be honest there is very little else one can say about the MA36 – except that it is one of those delightful little boxes that you don't need to be a genius to use!



The MA36 Analyser from StudioMaster is a brilliant MIDI fault-finding tool

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CHECKOUT MA36 ANALYSER

Ease of Use ●●●●●
To use it you just plug the MA36 into the MIDI line and look at it – it really is as simple as that.

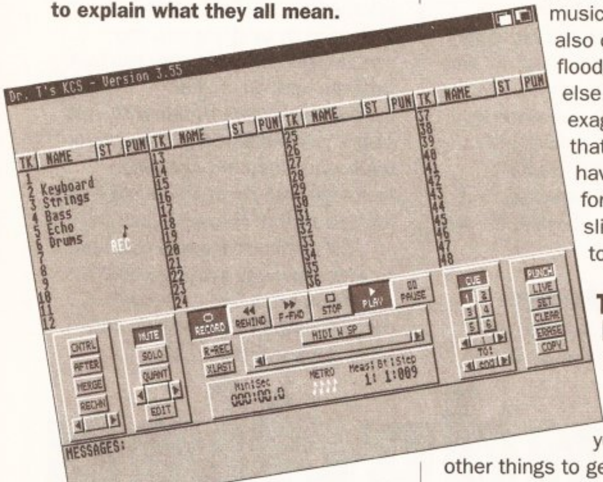
Features ●●●○○
Has all the basic facilities you'll need for conventional MIDI fault-finding.

Price Value ●●●●○
The price of this unit has dropped over the years, but it is unlikely to drop further. At its current price it really is outstanding value for money.

Overall rating ●●●●○

The MA36 is a brilliant little gadget – and if you don't believe me, you should find someone who's got one and check it out for yourself!

A lot of musically-minded new Amiga owners have joined us over the past few months, and some will doubtless be looking for help within these pages. Since it's been a while since we last looked at the fundamentals of MIDI, now seems a good time to provide a whirlwind tour of some of the basic terms and to explain what they all mean.



Dr T's *KCS* package is just one MIDI sequencer that is well thought of in Amiga circles

First then, let's look at why MIDI evolved in the first place. In the early days of electronic music it was far from easy to link different pieces of musical equipment together. This was because many manufacturers created and used their own workable, but almost totally incompatible, communications arrangements. The solution, namely the development of the single 'Musical Instrument Digital Interface' standard that we now call MIDI, solved the majority of those earlier incompatibility problems.

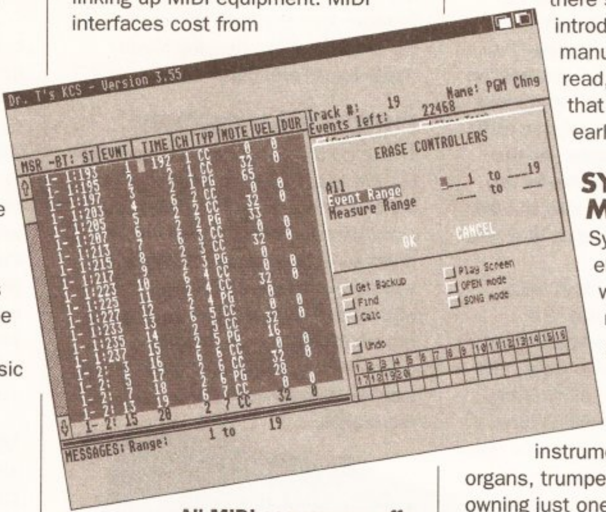
So, MIDI is a communications system specially designed to allow musical equipment from any number of different manufacturers to 'talk' to each other using digital messages. Among other things, MIDI has encouraged the development and use of a piece of software known as the 'sequencer'. On the Amiga this is simply a computer program that is able to read, store, edit and replay the messages generated when MIDI instruments are played. Nowadays this software is commonplace and there are many established Amiga programs to choose from.

Not only has sequencing made life easier for the serious and experienced musician, but it has also opened the floodgates for everyone else. It is no exaggeration to say that MIDI sequencers have made it possible for anyone with the slightest ear for music to sound good!

THE BASIC EQUIPMENT

Assuming you already have an Amiga computer you will need three other things to get started in MIDI sequencing: a MIDI interface, a keyboard synthesiser and a sequencer program. You may also need one or two connecting leads if they were not supplied with your synthesiser or MIDI interface. These are called MIDI leads and can be purchased for a few pounds from almost all computer shops.

You'll find plenty of MIDI interfaces advertised within the pages of *Amiga Shopper*. They are quite simple pieces of hardware which plug into the Amiga's serial port, thereby providing the computer with the right physical connections and signal characteristics needed for linking up MIDI equipment. MIDI interfaces cost from around £20 upwards, depending on the facilities provided.



All MIDI sequencers offer sophisticated control functions

Sequencers vary enormously in the options they provide but all will let you record, play back and edit MIDI data. You will, for example, be able to add and delete notes, cut and paste fragments of music, change key, and improve the timing of the music you record, this last facility via the 'quantisation' options. Many sequencers adopt a tape recorder style approach – the analogy is a good one because, in concept, a sequencer is very much like a multi-track tape recorder. The main difference is that digital data is stored rather than audio sounds. Whichever sequencer you choose there should be an introductory tutorial in the manual and you should read, and work through, that material at the earliest opportunity.

Binary	Hexadecimal	Decimal	Name
1111 1000	F8	248	Timing Clock
1111 1010	FA	250	Start
1111 1100	FC	252	Stop

Three example status bytes – note that they all have bit 7 set to '1'.

status byte	note pitch	note on velocity
1001nnnn	0kkkkkkk	0vvvvvvv

These three bytes show how a single MIDI note is transmitted.

SYNTHETIC MATERIALS

Synthesisers are electronic 'instruments' which can create musical tones by generating (or 'synthesising'), sound waves. They can mimic other instruments such as pianos, organs, trumpets or drums, so by owning just one synthesiser you will be able to create an almost infinite variety of different sounds.

The good news here is that even the cheapest synth models can sound good, though one thing you will not get with a low-priced synthesiser is a keyboard which can sense how hard the keys have been pressed. Notes will simply be 'on' or 'off' but this is something you must learn to live with, unless you spend a lot of money on a 'touch sensitive' keyboard. For general MIDI work synthesisers need to be polyphonic – in other words, able to play many notes at once. It is also useful for the synthesiser to be multi-timbral, which means that it is able to play more than one type of sound at the same time.

Incidentally, a number of synths (mainly those designed for home and non-professional use) have amplifiers and speakers built in. However, many synthesisers do not and therefore have to be connected to a separate amplifier or speaker system in order to produce audible sounds. For in-home low-volume use you can often avoid further expense by just using your home stereo system.

Nowadays you can get not just keyboard synthesisers but also guitar synths, drum pads and a number of other 'MIDI input' devices. Nevertheless, most people tend to use keyboards for the bulk of their MIDI sequencing work, whether they are keyboard literate or not. If you have never played a piano or other keyboard before, don't panic – it is not necessary to become technically competent (unless of course you want to become so). You only need to learn enough to find your way around the piano-style keyboard.

WHAT'S THAT DIN?

All MIDI synthesisers have at least two 5-pin DIN sockets. The one marked 'MIDI IN' is where the synth

JARGON BUSTING • JARGON BUSTING

DIN connector – A plug/socket system found in many pieces of audio equipment (cassette tape machines, for instance, often have DIN plug connections).

Expander – A common name for a synthesiser sound module that contains the sound generating circuitry of a synthesiser without any keyboard. These can be used in conjunction with a normal synthesiser to add to (or, in other words, 'expand') the number of sounds it can make.

Hex – Abbreviation for 'hexadecimal', the base 16 numbering system which expresses numbers using the digits 0-9 together with the letters A-F.

Pitch – The frequency of a musical note. Bass notes have low frequencies and are low in pitch. Piano keyboard notes increase in pitch and frequency as you go from left to right across the keyboard.

Serial transfer – A method of transmitting information as a stream of bits sent one after the other.

Synth – Abbreviation for 'synthesiser'.

Mastering MIDI

The Musical Instrument Digital Interface has revolutionised computer music-making. Paul Overaa explains its 'ins' and 'outs' – and its 'throughs'

receives its MIDI data, and the one marked 'MIDI OUT' is where data is transmitted from. Sometimes you'll also find a 'MIDI THRU' socket – this provides a duplicate of whatever is being received at the IN terminal. Not all MIDI equipment will understand every different type of MIDI message, nor will every piece of equipment transmit every type of message. However, this doesn't usually cause much in the way of problems provided you are aware of the messages your particular equipment can send and understand.

PLUGGING AWAY

Linking together a three-piece Amiga sequencer, synthesiser, and interface MIDI system is usually very easy. First, attach your MIDI interface to the Amiga's serial port D connector. Connect the MIDI OUT of the synthesiser to the MIDI IN of the MIDI interface with one MIDI lead – this will be the lead that, via the interface, carries data from the synthesiser to the sequencer program. Then link the MIDI OUT of the MIDI interface to the MIDI IN terminal of the synthesiser, using the second lead – it is this lead that carries information from the sequencer back to the synthesiser. Switch on, load your sequencer program as per the instructions given in the manual, and you'll be ready to start making music.

By the way, there are a few budget synthesisers which have MIDI terminals but which were not really designed for anything other than stand-alone use. Some, such as the Yamaha PSS 790 and PSS 590 models, exhibit a non-standard trait of echoing (re-transmitting) all received MIDI data through their MIDI OUT terminal, which can be unnerving if you are not expecting it. Some Amiga sequencers, including Gajit's *Sequencer One Plus*, offer a fix for this. So, if you own such a synthesiser you will be able to use it quite happily – provided you choose your sequencer software carefully.

ACROSS THE CHANNEL

If you are new to computers and music then using MIDI can be a little traumatic, particularly when you are just starting out. However, there's no doubt that things will make more sense if you know a little more about how MIDI actually works. The MIDI standard allows there to be sixteen separate channels. These are encoded within a special class of MIDI messages, which are (perhaps unsurprisingly) known as 'Channel messages'. By setting each MIDI instrument to a different channel it's possible for them to be selective about the messages they respond to.

At the highest level MIDI recognises a whole range of other, more general, system messages (known as 'Real Time', 'Common', and 'System Exclusive' messages). In all cases the MIDI information is sent using the digital equivalent of an 8-bit binary number called a 'byte'. MIDI messages themselves consist of one or more bytes that can be regarded as being sent one after the other. The first byte, called the 'status' byte, is always very important because it defines the type of message being sent. Any trailing bytes of a message, if they exist, are known as 'data' bytes.

So, how does MIDI distinguish between status bytes and data bytes? It uses the uppermost bit of each byte – status bytes always have the high bit (bit 7) set, so these numbers can range from decimal 128 to decimal 255 (10000000 binary to 11111111 binary). Data bytes are therefore restricted to values ranging from decimal 0 to decimal 127 (00000000 binary to 01111111 binary).

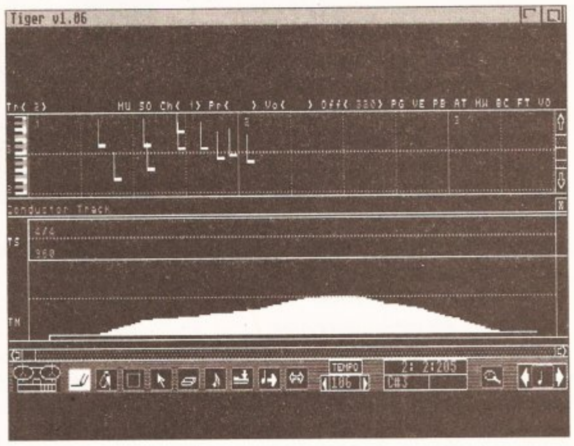
For instance, Real Time messages are all just one byte long – so the status byte is the message itself. Some example definitions are shown in the table immediately opposite on the facing page.

MESSAGE RECEIVED...

As an example of a typical channel message here are some details of the one that is used to turn notes on. Three pieces of information are usually sent when you press a note on a MIDI keyboard – the 'note on' status byte, the 'key number' (which represents the note's pitch), and a 'note on velocity' byte. This latter value represents the speed at which the note was struck. Keyboards without touch sensitivity usually transmit a velocity value of 64 for all notes played.

There are a great many other MIDI messages available including a whole range of general and specialised controller messages. It is, for example, possible to connect or disconnect a synthesiser keyboard from its sound generator circuits by using certain local control commands. A channel-specific 'panic button' message is also available that cancels all notes currently sounding. There is even a set of mode control messages which define a unit's response to MIDI voice messages. On top of this, custom messages known as 'System Exclusive' (or 'Sysex') messages are also available. With these only the outside of the information packet is fixed – the internal contents are specified by whoever created the message in the first place.

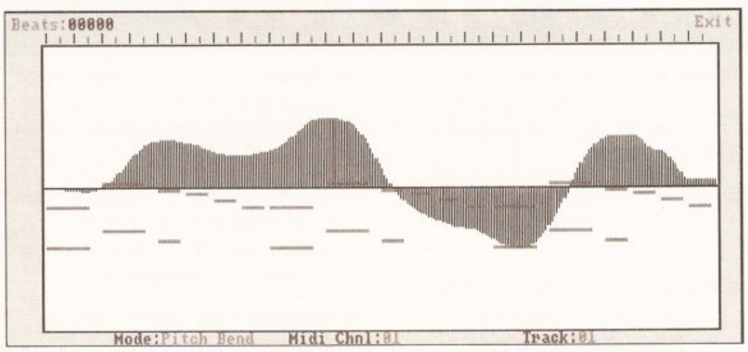
So, now that we know how MIDI messages are put together, one question still remains: when do these messages get transmitted? Adjusting a control knob or pressing a note on the keyboard will usually cause streams of number-based messages to be transmitted at the MIDI OUT terminal.



Many MIDI editing functions can be operated via the mouse

SEQUENCE OF EVENTS

When you connect a sequencer into a MIDI system it is able to 'read' all of these MIDI messages and 'record' what is going on as you play. Sequencers are not at all interested in the sounds being made – just the MIDI messages. These can then be stored, manipulated, and re-transmitted, according to the rules outlined in the MIDI standard.



The MIDI editing screens of some sequencers can look quite spectacular

It is not worth looking in detail at all the messages defined in the MIDI specification, as many of them will make little sense until you've had some hands-on experience with your own equipment. The important thing to remember is that whenever you press a key on a keyboard, select a program setting, or whatever, then your actions may well be translated into a MIDI message. I say 'may be' because the MIDI standard does not exactly specify what transmission or reception facilities a particular piece of equipment should have. Nor does it specify the extent to which individual pieces of MIDI equipment should implement all the various possible MIDI facilities. These can, and often do, vary enormously from synthesiser to synthesiser. You'll just have to try them and see! AS





What does the name *Adorage* mean to you? Not a lot, I would suspect. What if I tell you that the ADO part is an acronym? Still doesn't ring a bell? OK then, let me spell it out...

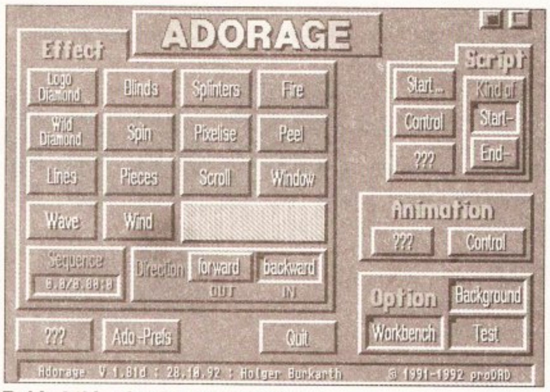
ADO was a term originally used to describe an early video effects device manufactured by Ampex – the initials stand for 'Ampex Digital Opticals'. What it did was manipulate a video image to provide effects such as stretching, compression and so on – effects which may seem crude by today's standards but which were nevertheless a huge breakthrough around 10 years ago when the hardware was first unveiled. Now, in the 1990s, we have processing power many magnitudes above these early machines and even the Amiga has been recruited to flip and shatter images all over the place. Hence *Adorage*, a new software product

> **"Adorage was first developed... for a professional TV studio"**

developed by German company ProDAD, published by HS&Y and distributed here by Micro-PACE UK.

Now, *Adorage* isn't the first program to do special effects on images – Aegis's *AniMagic* program has been around for several years and has proved that Amiga images can be spun and peeled just like any other, though with the penalty of long processing times and not entirely smooth playback. Nevertheless, *AniMagic* was a flexible and usable program, if a little difficult to get to grips with at first.

But that's the past, now it's back to the present and *Adorage*. The thin manual tells us that *Adorage* was first developed as a custom program for a professional TV studio to provide fast processing of effects and smooth, fast playback using its own Super Smooth Animation (SSA) format – which is at present incompatible with any other software, except the included Player utility. However, you can save the images as a sequence of IFF files which can then be loaded into *Deluxe Paint IV*, and played as an animation – though the playback is noticeably jerkier than when using SSA format.



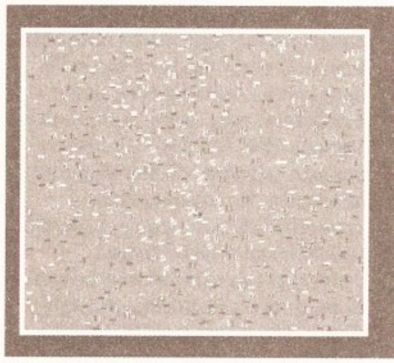
Behind this simple user interface lurks a host of features

HIGHLY EFFECTIVE

Setting the program up and using it is pretty straightforward. First locate your images – but bear in mind that *Adorage* will refuse to use them unless they are interlaced. HAM, 24-bit and HAM-8 are also rejected, so you're pretty limited in your choice of input. Fortunately, *Adorage* does handle overscan OK, so all is not entirely lost. And, although *Adorage* can have both foreground and background pictures in an animation, they must have the same resolution and, for the sake of image integrity, identical colour palettes.

Next you must decide what effect to use – from a choice of fourteen main categories each with multiple subchoices – and you're pretty much in business. *Adorage* will then calculate the animation and store it ready for playback. The first surprise is how quickly an animation can be rendered, although obviously this is governed by the type and length of effect chosen, as well as the image complexity and the speed of the Amiga. The second surprise is that SSA format really is smooth, both in motion and visually, though obviously how smooth the motion is depends on the memory configuration of your Amiga and the size of the animation, since SSA anims are played back from RAM.

The smoothness is obtained by drawing the sequence of animation frames as 'Half Frames' – which might be best described as the equivalent of one 'field' of video (you might remember that two fields make a standard 'frame'). This results in



animations with less jagged edges than normal, and with better compression than regular Anim OP5 format files. Effects can be timed in seconds or Half Frames, and can be varied in length by adjusting the program parameters.

BACK AND FORWARDS

But it doesn't stop there. One of the nicer features of *Adorage* is its ability to tag onto the last animation sequence and seamlessly attach a new one. This is where the 'In/Out' gadgets come into their own, making it easy to reverse the motion of an effect. This facilitates transitions such as 'fly in' or 'explode out', which can produce some very nice sequences. Complicated presentations can then be accomplished by chaining several sequences together.

ADORAGE EFFECTS

Here's a quick spin through *Adorage's* effects selection. And remember – all of the effects described have more than one (and often many) variations.

- **Logo Diamond** – a variety of effects based on revealing and concealing an image in rectangular sections.
- **Blinds** – vertical and horizontal 'Venetian Blinds', with between two and five slats each.
- **Splinters** – breaks the image into variously-sized, shifting, rectangular chunks.
- **Fire** – segments of the image fly around in an explosion-like effect.
- **Wild Diamond** – uses random squares (not in fact diamonds, despite its name) to build up a screen picture.
- **Spin** – a set of circular wiping effects which build images up using wedges.
- **Pixelise** – gradually reveals the image from a chunky version of itself by making the 'pixels' progressively smaller.
- **Peel** – simulates the effect of a turning page. This effect is available in either left- or right-hand motion.
- **Lines** – uses horizontal or vertical lines to build up the image.
- **Pieces** – a series of effects which compress and expand images, or build them up from several sliding chunks.
- **Scroll** – scrolls the picture in from all corners and edges of the screen, with the additional choice of bounce or deceleration.
- **Windows** – six wipes based on rectangles.
- **Wave** – distort the images into a wavelike transition onto screen from any edge.
- **Wind** – splits the image into small rectangles and 'blows' it around the screen in four different variations.



Adding a page-turning effect to your logo is no problem with *Adorage*

All the rage

The Adorage package promises smooth animations and spectacular special effects. Gary Whiteley prepares to be amazed

This flexibility also allows the selective deletion of separate sections of the animation and the possibility of changing the playback speed of individual elements within a sequence – something which is not possible with, say, *Deluxe Paint*.

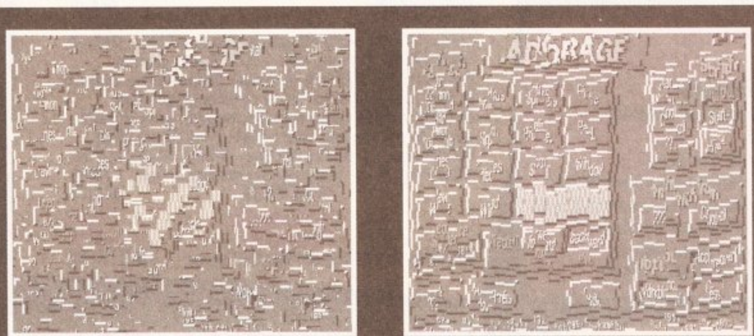
An image can be clipped and only the selected part affected, with the added ability to move the effect centre to a new screen position. And each time a new sequence is added the last parameters can be re-used, or new ones defined if required. This repetition is very useful where the same effects are used on a number of images and saves a lot of setting-up time.

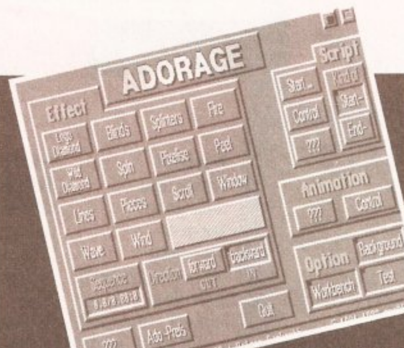
STICK TO THE SCRIPTS

Another useful feature of *Adorage* is its script function – which saves only the details of one effects sequence, each containing up to two effects. This doesn't sound very exciting, but for storage purposes it can be a huge space saver, since only a script is stored, rather than a fully-rendered animation. Of course, the animation has to be re-rendered after loading the script, so time could be a factor, but – as ever – preparation is the key. Chaining several individual scripts together can produce a complicated animation sequence many megabytes long from files which might otherwise take up less than 500K, including images.

> *"only a script is stored, rather than a fully-rendered animation"*

Scripts are also quite flexible, since they can be modified after loading to manipulate images other than the ones they were designed to control. So it might well be possible to build a bank of 'custom effects' which can be called on as required, modifying the image to fit the need.





Build up a screen from bits – or reverse the order to make an explosion!

LACK OF VARIETY

While there's no doubting that *Adorage* can perform some clever tricks and is generally fast, smooth, stable and easy to use, it's a shame that the images it uses have to be limited to interlaced, non-HAM, IFFs. A shame because this places restrictions on output quality and limits the applications of the program – even including HAM would have been handy. Hopefully a later version will have HAM-8 support.

Although there is quite a bit of flexibility to *Adorage* I found some of the effects to be a bit samey, but the animation building and script functions are very helpful. A little more variety would be nice, possibly in the form of a few user-customisable effects.

SHOPPING LIST

Adorage £79.99
by ProDAD/HS&Y

Distributed in UK by:
Micro-PACE UK Ltd, Unit 10,
Perth Trading Estate,
Perth Ave,
Slough, SL1 4XX
☎ 0753 551 888

SYSTEM REQUIREMENTS

***Adorage* will run on any Amiga with at least 1Mb of RAM and a hard disk. 3Mb ram (or more) and an accelerator are recommended. A genlock will also be required for superimposing graphics over video.**

CHECKOUT ADORAGE

Documentation ●●●○○
Slim and adequate, if sometimes oddly worded and presented, which reflects its German origins.

Features ●●●●○
Repetitive effects but flexible on the manipulation side.

Ease of use ●●●●○
Very easy to use.

Speed ●●●●●
The processing and replay of SSA animations is probably the fastest and smoothest achieved on the Amiga.

Price Value ●●●●○
Perhaps a little high.

Overall rating ●●●●○

Obviously of limited appeal – video and animation users looking for new effects should check it out if they don't mind interlaced, non-HAM, non-AGA images.

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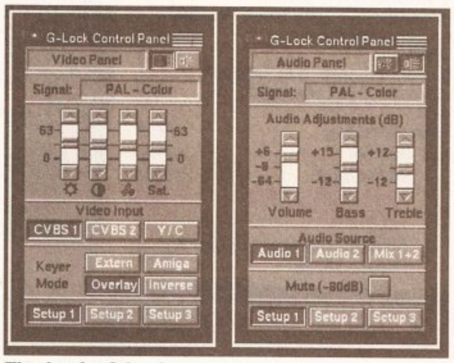
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With Y/C, composite video, audio connections and software capabilities including AGA graphics and ARexx support, GVP's new *G-Lock* would appear to be priced as the ideal tool for videomakers needing a good quality, well-specified genlock. Let's take a look and see if this is true.



The basic *G-Lock* control panels, used for adjusting the parameters of the video and audio signals

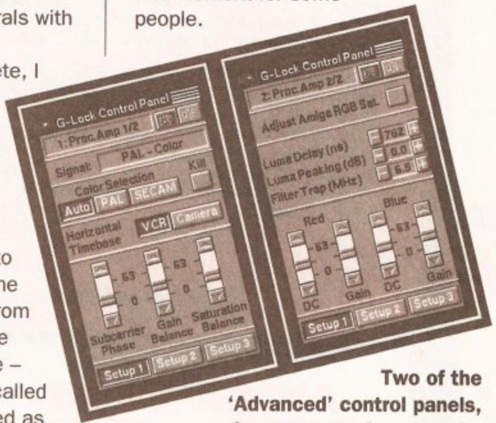
GETTING STARTED

G-Lock has an RGB connector at each end, two composite video inputs, two audio inputs, one (mono) audio and one composite video output and Y/C video in and out. It has no knobs or buttons. CVBS and Y/C inputs should not be connected at the same time, though all the outputs can be used at once.

Connection is straightforward – RGB from the Amiga, RGB to the Amiga monitor, video and audio in, video and audio out and a flying cable to the joystick port. The *G-Lock* takes all its power from the Amiga and has no option for an external PSU, which could place restrictions on the use of other peripherals with A500/A600 machines.

Couplings complete, I booted up, fully expecting to see a genlocked image over video. No way José! The *G-Lock* isn't your average genlock – it requires a little extra to get it going. So it's time to run the software. From floppy or hard drive the procedure is the same – activate the program called *GL* and then be amazed as nothing happens other than a requester asking you to reboot or cancel. That's right – it's necessary to reboot the Amiga before *G-Lock* will run, something which may become a major irritant to the average Amiga videographer without a hard drive.

At last, we're ready to roll. Well no, not quite. One final reload of the *GL* software and up pops a control panel. Clicking on the appropriate source button locks in the video and finally we can start work. Even if the genlock isn't being used for video work a video signal should still be supplied, since the output quality using the *G-Lock's* internal sync is rather poor. Again, this might prove inconvenient for some people.



Two of the 'Advanced' control panels, where more serious tweaks can be made to the video signal

TAKING CONTROL

If the host Amiga has an AGA chip set or ECS Denise then six different control panels are available, if not there are only five. The basic two – which are the default panels – control video and audio respectively. As you can see from the illustration, the video panel has sliders to adjust brightness, contrast, colour and saturation, as well as buttons for determining which output mix is sent to the video recorder (from Amiga, external, overlay or inverse) and which video input (from CVBS 1, CVBS 2 and Y/C) to select. The audio panel is simpler, with volume, treble and bass controls. In addition, both panels carry buttons which can quickly change the setup parameters by loading Preset values from disk.

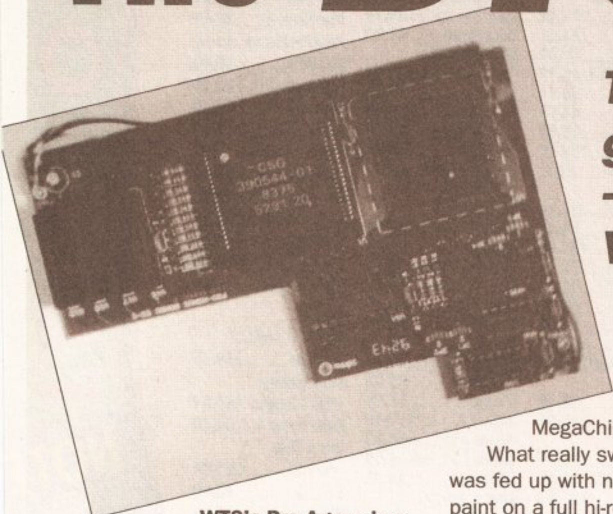
However, you can't make real-time control adjustments while genlocking as the control panel has to be on-screen – not an attractive prospect during a video edit.

The remaining control panels are the 'Advanced' ones. The first two are for adjusting some of the more esoteric values of the video signal via the Processing Amp built into *G-Lock*. Small tweaks can be made here in an attempt to get the best out of your video signal.

The fourth advanced menu is probably the most important for AGA/ECS owners, as it lets you determine either the bitplane, or the actual colour which is used to key the video through. Contrary to what the manual implies, *G-Lock* does not 'chroma key'. Instead it keys graphics over a selected colour, rather than video over selected graphics colours.

With no hardware controls, all attempts at special effects have to be done using ARexx commands. So, you could use *G-Lock* as an automatic colour splitter for digitisers which have ARexx ports, or to fade to black on one composite video source

The BIG picture



WTS's Pro Agnus is a plug-in card which can bring the Chip RAM of Amiga 500, 1500 and 2000 models up to a mighty 2Mb

The WTS Pro Agnus card gives you 2Mb of Chip RAM – for under £150. Gary Whiteley puts it to the test

I had been contemplating upgrading my Amiga 2000 to 2Mb of Chip RAM for some time, and had almost succumbed to buying a DKB MegaChip. But then I saw WTS's advert in *Amiga Shopper* for its 2Mb Pro Agnus upgrade card – British made and, at £139, around £60 cheaper than the main MegaChip competition.

What really swung me was that I was fed up with not being able to paint on a full hi-res screen with my OpalVision card. Plus, multitasking with *DPaint* was eating up a little too much vital graphics memory for my liking. So, I plumped for the WTS.

Opening the box, I was initially startled to find that three trailing wires were soldered to the small green circuit board which held the 2Mb Super Agnus and an extra megabyte of Chip memory. I was startled because these wires aren't shown or mentioned in the adverts, and neither is the need for a little soldering. Still, nothing ventured, as they say...

MAJOR SURGERY

The method of installation for an Amiga 2000 (or 1500) first involves taking the cover off the computer, removing the power supply, and any cards or other additions which may impede installing the Pro Agnus card. Then the first nasty part: pulling the 1Mb Agnus chip from its socket on the Amiga's motherboard. Now, I've heard a few horror stories about damage occurring at this stage, (sockets being cracked and such like) and I was extremely cautious as I contemplated this part of the proceedings. To avoid any damage from static electricity I wore an earthing wristband attached to a central heating pipe. I also wrapped a large elastic band tightly around the outside of the square Agnus socket in the hope that it would add a little extra strength to the fragile-looking plastic item from which I was about to prise the original Agnus.

Heart pumping wildly, I took a small jeweller's screwdriver and very carefully started levering the chip from its socket – a little at a time on opposite corners while trying to hold the socket together. I used a screwdriver because a chip-puller isn't provided with the card, though I gather that they aren't always that handy in any case. After about two minutes of gentle coaxing the Agnus popped out and I'm glad to report that no untoward damage had occurred. The next thing to do was plug the new circuit card into the empty socket – probably the easiest part of the whole process.

While I had been removing the Agnus my soldering iron had been warming up. The three trailing leads had to be connected to the legs of a couple of chips, including the 68000 CPU. Now, this worried me a bit. I

and then fade up to the other. However, it doesn't appear to be possible to cross-fade between video and graphics, which is quite an important omission on a unit of this cost. Mind you, the extensive use of hot-keys makes flipping between different genlock modes and screens quite easy, as long as you keep track of where you are.

PICTURE PROBLEMS

Genlocking over composite video produced quite smeary colours, especially with the stronger reds and blues – which invariably cause trouble anyway – though Y/C naturally fared somewhat better. A worse problem is that *G-Lock* can't handle fast tape searching and drops the signal completely – a situation which won't enamour it to those who use just one monitor for viewing both their source video and graphics.

I also had a lot of problems using *G-Lock* with a GVP-accelerated Amiga 2000. The manual claims that this is due to a shortcoming of AmigaDOS 2.0 when rebooting accelerated machines, but surely GVP could have at least got its own act together here!

My other major gripe was that *G-Lock* refuses to work with an OpalVision-equipped Amiga (only the complete removal of the Opal hardware can overcome this). Now this probably isn't GVP's fault, but it's worth knowing about. AS

SHOPPING LIST

G-Lock................................ £349
By GVP

Distributed in the UK by:
Silica Systems,
1-4 The Mews,
Hatherley Road,
Sidcup,
Kent,
DA14 4DX
☎ 081 309 1111

CHECKOUT G-LOCK

Documentation ●●●●○
Good and generally informative.

Features ●●●○○
Scores well for inputs/outputs and software controls for video, but poorly for lack of graphics mixing control beyond key on/off and inverse.

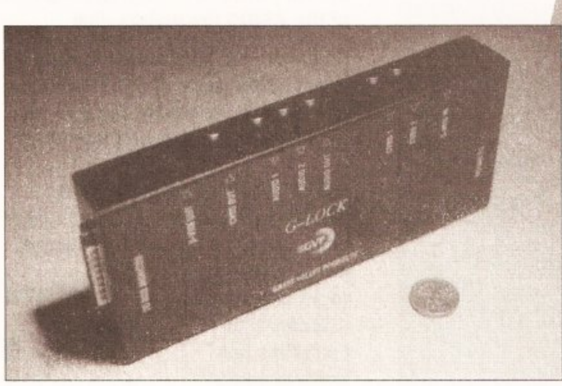
Quality ●●●●○
Reasonably good overall quality, so long as the input video signal is up to scratch. Suitable up to semi-pro use, at best.

Price Value ●●●○○
A little expensive, considering its lack of external controls, Amiga/video fading and unprofessional Phono connectors, but still well-priced for a Y/C genlock.

Overall rating ●●●●○

Not a particularly outstanding genlock, but certainly not the worst I've seen either.

Box of tricks



A consumer genlock is the latest addition to GVP's highly-respected product range. Gary Whiteley takes a peek at the G-Lock

mean, soldering inside the machine you make your living from isn't a pleasant thought. Still, it was too late to chicken out. Then I remembered that I had one of those spring loaded clips, as used in test probes, lying around somewhere. So I found it and fixed it to the wire assigned for the CPU connection. Then, after verifying the naming convention for chip legs, I took a Chinagraph pencil (a soft wax pencil used for marking film) and counted around the 68000 chip until I found pin 48. The flimsy instruction sheet could make finding it a little clearer, though it's not too hard if you have access to some basic electronics handbooks.

So, instead of soldering onto the CPU, I clipped the wire on. The other two wires needed connecting to a chip toward the rear of the Amiga. I had no more spare clips, so here I carefully soldered a couple of short wire tags to the designated pins, taking care not to linger too long with the soldering iron lest I cooked either the chip or motherboard. I then soldered the remaining wires into place.

Actually, all went well and I soon had the Amiga reassembled and rigged up ready to go. Anticipating success, I booted up. All looked fine. I had two megabytes of Chip RAM and all its attendant advantages – no more running out of display memory, faster anim playback, smoother scrolling displays, larger brush pickups and bigger screen sizes. I was happy.

TRIPLE TROUBLE

But only for a while. An intermittent fault appeared which caused small lines to appear randomly on any graphics screens, spoiling any work I was doing. I got a replacement – but it crashed consistently in hi-res mode as a result of the extra Chip memory being wrongly assembled. A third replacement wouldn't work at all.

Finally WTS fitted yet another Pro Agnus on its premises and I'm glad to say that this time all worked correctly. Perhaps I was really unlucky, as the folks at WTS said that they had never experienced problems like this before.

WTS has since implemented a policy of fitting the units for free (excluding postage costs), so, considering the delicate nature of the operation, I would strongly advise you to take advantage of the offer if you don't mind losing your Amiga for a few days.

A WORD OF CAUTION

There's no doubting the advantages that Pro Agnus brings, but there is a consideration you should bear in mind before parting with your cash. It is known that Pro Agnus won't work alongside either Commodore 2630 cards or KCS A500 trapdoor expansions.

There may well be other configurations that will cause problems, so before buying it's probably best to check with WTS first, and obtain written confirmation, that Pro Agnus is compatible with your particular system.

Two megabytes of Chip RAM are a boon to the serious videographer, so I imagine lots of you are contemplating this expansion. All I would advise is: get WTS to fit it!

SHOPPING LIST

Pro Agnus 2Mb..................... £139

From: WTS Electronics,
Chaul End Lane,
Luton,
Beds LU4 8EZ
☎ 0582 491949

CHECKOUT PRO AGNUS

Documentation ●●●○○
To the point, and usable, but more graphic instruction on counting the chip pins would be helpful.

Installation ●●●○○
If you're happy doing your own fitting then it's not such a difficult job – if you have the right tools and temperament. Otherwise it's wiser to have it done for you, especially now that WTS will do it for free. The provision of spring clips instead of having to solder would help considerably.

Compatibility ●●●●●
I had no trouble with any of the software I regularly use – but I don't play games so I can't comment on problems which might occur there. Pro Agnus is transparent to the system, so it's there every time you boot up.

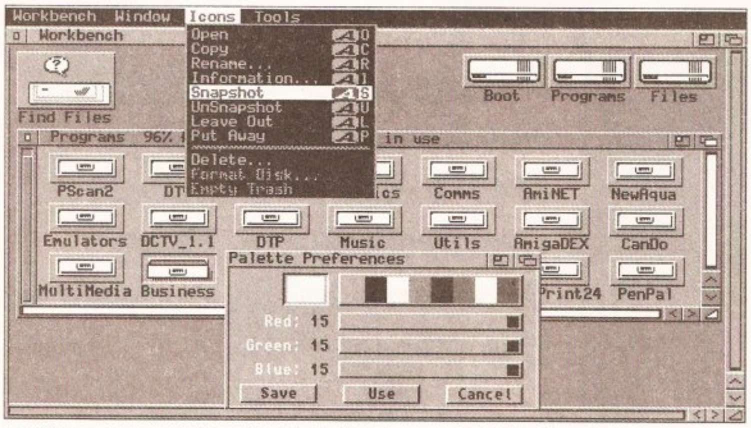
Price Value ●●●●●
The price is very competitive.

Overall rating ●●●●○

Assuming you don't have any of the trouble I did, then I would say that the WTS Pro Agnus represents good value. It can be fitted to the A500, A1500 and A2000 Amigas.

I'd like to start this month by quashing once and for all some unusual rumours about *AMOS* which have been floating around various bulletin boards over the past month or so. These rumours, spread by certain persons who shall remain nameless, claim that *AMOS Professional* has some serious bugs in it, a claim which anyone who has used the package will know is quite simply not true.

One example of such a rumour came from a user on the bulletin board '01 For Amiga'. He claimed that the serial extension in *AMOS Professional* had so many bugs that it didn't even work properly. OK, the serial extension has had its problems in the past, but Richard Vanner at Europress has assured me that it's now working perfectly.



***AMOS* has been criticised for its lack of support for Intuition, but all this could change with the forthcoming release of an Intuition extension**

Certainly in my (extensive) experience of using the serial extension, I've never discovered anything amiss.

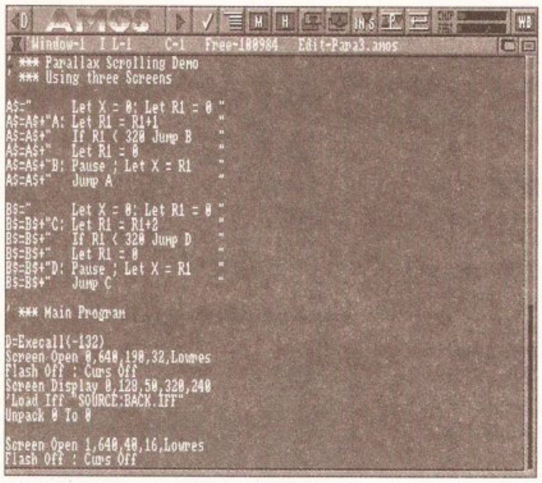
Apparently, there has only ever been one real problem with the serial extension, and this was on the original update disk when the serial extension was first launched. Even then, this wasn't a problem with the extension itself, but with the version of the Workbench 'serial.device' driver included on the disk.

> "In many ways, AMOS Professional is quite exceptional"

In many ways, *AMOS Professional* is quite exceptional – considering its sheer size and complexity, the amount of bugs that the latest update disk removes (more on this later) is minuscule. I'm not trying to say that this update nails every bug, but I'm sure most have now been removed. And even if further bugs do rear their ugly heads, the chances of most users ever encountering them is minimal. I've been pushing *AMOS Pro* to its absolute limits for months now, and I can safely say that I've never even seen 99% of the bugs that the update removes!

DON'T PANIC

The moral of this story is a simple one – if you think that you have found a bug in *AMOS*, don't scream your head off about it. This serves only to scare other potential *AMOS* users who – if they suddenly decide that perhaps *AMOS* isn't worth buying after all – will be robbed of the rare computing experience that is *AMOS* programming. Instead, check thoroughly that the 'bug' you have found is actually what you think it is (you'd be surprised how many people think they've found a 'bug' that in fact turns out to be a documented feature of *AMOS!*). If you're still sure that you've found something that shouldn't be there, then write down all the details on paper and post it to Richard Vanner at Europress Software. If the bug hasn't already been addressed, he can pass on the details to Francois Lionet, who can correct the bug for the next release of *AMOS*. At the end of the day, we will all end up with a better product!



If you're an *AMOS Pro* user, you should waste no time in getting hold of the *AMOS Pro* update disk

PRO GOES INTUITION

Many users – including myself – have been crying out for Intuition support within *AMOS* for years now. At last, it seems that Europress has finally bowed to public pressure with the news that work has started on an extension that will allow *AMOS Pro* users to code applications that take full advantage of the Amiga's windowing environment.

> "Many users... have been crying out for Intuition support... for years now"

Many would-be applications programmers have criticised *AMOS* for its lack of Intuition support, correctly pointing out that serious applications must run under Intuition for them to be acceptable as commercial products. Although *AMOS Pro* will multitask, its hardware-based screen handling unfortunately doesn't support Intuition's multiple screens option, which allows several screens to be opened and arranged from the Workbench.

When Europress finally launches the extension, it will make *AMOS Pro* a very attractive proposition for applications programming, thanks to its powerful 'Interface' language. This allows complex user interfaces to be created and managed under interrupt (look out for a comprehensive tutorial on *AMOS Pro's* Interface language coming up next month!).

Europress would like to stress that the extension is still in the very early stages of development, so don't expect to see it on sale for a couple of months yet. Rest assured that as soon as it is released, I will be bringing you a full review within these pages.

AMOS ANSWERS

Having trouble with AMOS? Are your interface routines not responding? Is your soundtrack silent? Are your bobs refusing to budge? Whatever the problem, Jason Holborn is here to sort it out

BOULDER BASH

I am writing an 'Asteroids' style game on my Amiga 500 using *Easy AMOS*. It is being written for my GCSE Computer Studies project. I am a bit stuck, so can you please help! Could you possibly give me a couple of routines that will handle the following:

a) Screen wrap-around. When the ship disappears off one side of the screen, I want it to reappear on the opposite side.

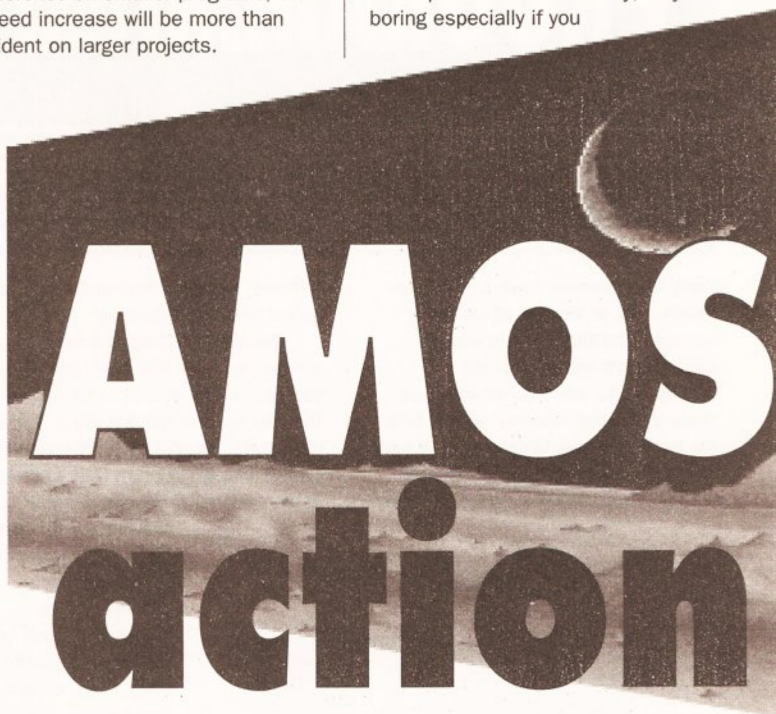
b) Acceleration. When the player pushes the joystick in a particular direction, the ship starts to slowly accelerate.

c) Bob movement. How do I make the ship move in the direction that it is currently pointing?

Rhydian Lewis
Dursley, Glos

Well Rhydian, I'm afraid I don't really have the space to publish complete listings of the routines that you need, and, since it's for your GCSE, you should be probably writing the code yourself anyway! However, I can give you some general guidelines that should put you on the right lines.

Let's start with the screen wrap-around routine. This is actually very easy indeed to do. All you need to do



Jason Holborn brings you all the news on the latest AMOS developments, including the very first AMOS Pro update disk

AMOS PRO UPDATED

Also no doubt in response to your calls and letters, Europress has released the first of many update disks for *AMOS Pro*. As well as the usual bug fixes, the update adds a couple of very useful features to *AMOS Professional*. Although Europress admits that this is still quite a minimal update (support for the new AGA chip set screen modes won't be implemented until the next one), the enhancements that the update offers are well worth having. You can obtain the update from any good PD supplier. Here's a quick run-down of all that's on offer:

> "the new 'test' function runs between 30 to 40% faster"

● **1200 Compatibility.** Many users encountered problems running *AMOS Pro* from the Workbench on an Amiga A1200. Although *AMOS Pro* loaded fine when booted from its own disk, *AMOS Pro* has now been fixed so that it will run from Workbench without problems, therefore making the package usable on a hard disk-based system.

● ***AMOS Pro* file selector.** The *AMOS Pro* file selector was considerably better than the original, but Europress has enhanced it still further with the addition of a couple of extra features. For starters, the file requester now fully multitasks, so you can happily type in a filename whilst the requester is scanning the directory of a disk.

The 'Store' slider has been enhanced too. No longer does it simply display a random selection of directories. Now, when you click on the 'Store' gadget, you get a far more helpful list of the directories currently stored. You can then select the one that you'd like to view, simply by clicking on its entry. The *AMOS* right mouse button trick has been restored too – when you click the right mouse button, *AMOS Pro* will display a device list. Click again and you'll get an 'Assign' list. Click a third time and you'll be transported right back to the original directory listing.

The way filenames are entered into the file requester has also been tidied up considerably. Instead of having to split the full filename down into a separate path and filename, you can enter the full filename complete with path information and *AMOS Pro* will automatically split the string down into the appropriate path and filename strings. Another useful extra is the addition of a very helpful 'file finder' facility. This marks any files within the current directory that fit a given wildcard combination.

● **Improved text reader.** If you'd like to add a hypertext-based help system to your own programs, you can do so with the new, improved text reader program. This can now handle text files containing hypertext information (see the section on *AMOS Pro's* Interface Hypertext facilities for more details), therefore making your help files much more, well, helpful!

● **Turbo-charged testing.** The *AMOS Pro* 'Test Program' facility has been totally recoded to make it considerably leaner and meaner. According to *AMOS* programmer Francois Lionet, the new 'test' function runs between 30 to 40% faster on a 68000-based Amiga.

And, as you might expect, on an accelerated Amiga, the overall speed is even more impressive. Although you won't notice a great deal of difference on smaller programs, the speed increase will be more than evident on larger projects.

● **Configurable default screen.** Bored of the red lowres screen? You'd prefer Workbench grey, Hires interlaced and overscanned? No problem – just set it to your heart's desire using the new options in the *Interpreter_Config.AMOS* program.

● **Improved monitor.** Debugging a program that continuously calls the same procedure can be very, very boring especially if you are sure that the procedure in question works fine. To make the process of debugging such programs considerably faster, the *AMOS Pro* Monitor will no longer single step through a closed procedure. Instead, it will perform the closed procedure at full speed and then return to single step mode when the procedure call returns you to the main program. This feature is particularly useful as it allows you to isolate sections of code for debugging. If you only want to debug a particular procedure, you could 'close' all other procedures so that the Monitor will ignore them.

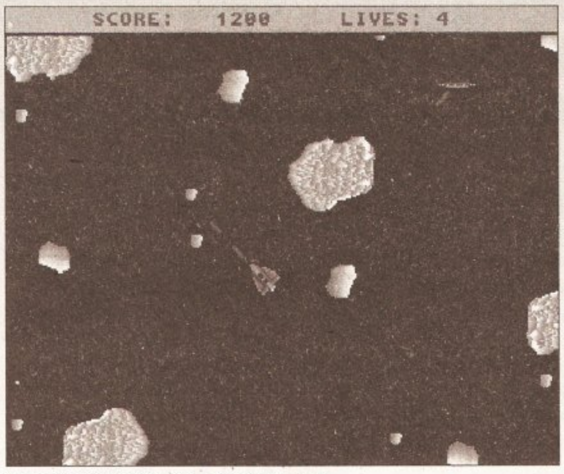
YOUR PAGE NEEDS YOU!

By the time you read this, the first few entries for my 'Your Page Needs You' competition should have started to arrive and I hope to print the best 'Star Field' and 'Infinite Bob' routines in next month's issue. Keep those entries coming and look out for more coding problems next month!

is keep track of the X and Y co-ordinates of the player's ship. When either co-ordinate reaches a maximum or minimum level, then it is reset to the opposite figure.

Say, for example, the ship moved off the screen to the right. The co-ordinate would therefore be greater than 320 (the width of a low resolution screen). When this happens, you would reset this co-ordinate to 0. To make this look more convincing, it's probably a good idea to open a screen larger than the current viewmode will allow and then limit the display to 320 by 256 (for a PAL system) using the 'Screen Display' command.

Next we have your acceleration routine. This is pretty simple too. You just need a variable that defines the speed of the player's ship. When the ship first starts moving in a particular direction, set the speed variable to 1. If the player then continues to push the joystick in that direction, increase the speed variable by 1 until you reach a maximum speed of, say, 5. This speed variable would then be used to dictate how many pixels the bob moves during every frame. It really couldn't be easier.



Screen wrap-around, acceleration and bobs: the three vital ingredients of the classic *Asteroids* game

Finally, bob movement. Once again, the best way of handling this is to have a variable that keeps track of the direction that the ship is pointing in. I'd advise you to limit the number of directions to a maximum of eight – north, south, south-east, north-east, north-west, and so on. You can then use the value held within this variable to calculate which direction the ship should move in. I hope this helps!

continued on page 64

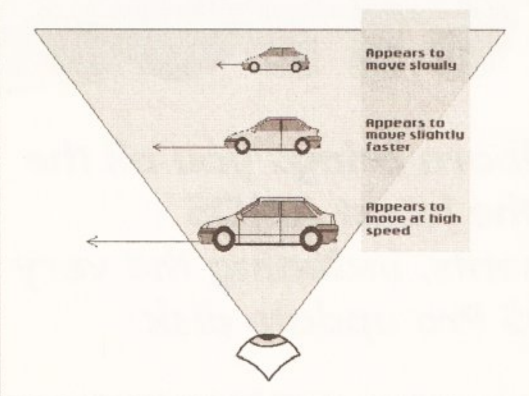
GAMES PROGRAMMING

PARALLAX SCROLLING

Early last year we took a pretty in-depth look at the art of scrolling screens and their use in arcade games such as the classic *Defender*. As you may or may not remember, the 'dummy' game that we based all this theory on had just a single screen that scrolled at a rate of 4 pixels per second in either direction. If you managed to get the code up and running for yourself, then I'm sure you'll agree that the results looked highly impressive. While our spaceship stayed in the centre of the screen, the background graphics scrolled past smoothly under the expert control of the Amiga's hardware scrolling facility.

However, times change and these days this sort of scrolling backdrop is decidedly old hat. If you're the proud owner of a game like *StarRay* or even Dave Jones' rather aged (but still brilliant) hit *Menace*, then you may have noticed that the scrolling employed by these games gives a far greater illusion of depth. This is achieved by scrolling certain sections of the screen at different speeds. This technique is called 'Parallax scrolling'.

Parallax scrolling is a very simple, yet very effective, scrolling technique that attempts to emulate the way we see moving objects in the real world. As your physics teacher no doubt tried to drum into you back in your school days, objects that are moving at the same speed will appear to move past us at different rates depending upon how far away we are from them. If an object is close to us, then it will appear to move past us at high speed. If, on the other hand, the same object was to move past us at a greater distance, it would appear to move slowly. To paraphrase Einstein, it's all relative.



Even if they are moving at the same speed, objects will appear to move past us at different rates depending upon the viewing distance

LISTING 1 • LISTING 1 • LISTING 1

```
' *** Parallax Scrolling Demo 1
' *** Using three Screens

' *** Set up Amal instructions

A$=" Let X = 0: Let R1 = 0 "
A$=A$+"A: Let R1 = R1+1 "
A$=A$+" If R1 < 320 Jump B "
A$=A$+" Let R1 = 0 "
A$=A$+"B: Pause ; Let X = R1 "
A$=A$+" Jump A "

B$=" Let X = 0: Let R1 = 0 "
B$=B$+"C: Let R1 = R1+2 "
B$=B$+" If R1 < 320 Jump D "
B$=B$+" Let R1 = 0 "
B$=B$+"D: Pause ; Let X = R1 "
B$=B$+" Jump C "

' *** Main Program

Screen Open 0,640,190,32,Lowres
Flash Off : Curs Off
Screen Display 0,128,50,320,240
Load Iff "SOURCE:BACK.IFF"

Screen Open 1,640,40,16,Lowres
Flash Off : Curs Off
Screen Display 1,128,237,320,
Load Iff "SOURCE:MID.IFF"
Screen Copy 1,0,0,320,40 To 1,320,0

Screen Open 2,640,20,16,Lowres
Flash Off : Curs Off
Screen Display 2,128,274,320,
Load Iff "SOURCE:FORE.IFF"
Screen Copy 2,0,0,320,20 To 2,320,0

Channel 0 To Screen Offset 1
Channel 1 To Screen Offset 2
Amal 0,A$ : Amal 1,B$
Amal On

Wait Key
```

AMOS *ANSWERS* (continued)

continued from page 63

CHEAT BUSTER

I am nearing completion of a board game to which I would like add the ability to load and save the current positions, so that players can continue playing over a period of time. At the moment I am using a simple sequential file to save the contents of the different arrays and variables, but the only problem with this solution is that it makes the file easy to edit if the player should wish to cheat.

Can you think of another method that would make the file unreadable to unauthorised users?

Jim Campey
Brentford, Middlesex

I think the best way to tackle this problem would be to use some form of encryption. This could be handled by a procedure which is called each time a variable needed encoding. The encryption method is up to you. You could, for example, convert all characters to ASCII values and then add a given value to them. For numbers, why not convert them to characters? You'll obviously need to keep very careful control over the file format, but encryption will do the job.

BACK TO BASICS

I do not yet own an Amiga, but I have read your magazine since the very first issue and very much enjoy it, especially the *AMOS* pages.

My problem is that even though your *AMOS* column has taught me everything I know about *AMOS*, I'd

HELP! I NEED A HOLBORN

Each month our *AMOS* genius in residence *(yes, that's you, Jason – Ed.)* answers your *AMOS*-related problems within these very pages. So if there's any aspect of *AMOS* that is troubling you, no matter how large or small, get your letters off to Jason Holborn, *Amiga Shopper*, Future Publishing Ltd, 30 Monmouth Street, Bath, Avon BA1 2NA.

SCROLL FACTOR

We can emulate this natural phenomenon within games programs by scrolling sections of the screen at different speeds – a technique that has been used to great effect within many high speed arcade games. In *AMOS* we're quite spoilt for choice, as this language allows us to achieve pretty much the same effect using a variety of different techniques.

Possibly the easiest method of getting a parallax scrolling effect is to use the *AMOS* hardware scrolling facility. But, as any experienced *AMOS* programmer will know, hardware scrolling is restricted to scrolling whole screens only. This is best demonstrated by the 'dummy' shoot 'em up game that we concentrated on last time around. So, how do we achieve a parallax effect using hardware scrolling? Well, the solution is to split the viewing area into several individual screens, each of which can be scrolled independently of the other.

FIELDS OF VIEW

Starting from the top of the screen, we would open a large bitmap that contained the background graphics in the far distance (stars, planets, and so on). Then below this we could open up another screen that contained another set of background graphics. This time, though, the graphics would scroll at a slow rate (1 pixel per frame, for example). Next, we need another screen containing the foreground graphics (those closest to us). Once again, this screen would also scroll, but at a slightly faster rate (2 pixels per frame). If you then combine these three screens and scrolled the last two, a primitive sort of parallax effect could be achieved.



A quick and easy method of producing a parallax effect: scrolling three or more separate screens at different rates under AMAL

However, there are two problems with this approach. Because we're using three separate screens, a visible line can be seen between each. It's therefore a good idea to restrict the colours used at the top and bottom of each of these screens to darker shades that blend in with the black dividing line that the Amiga produces. Secondly, any bobs that you use are restricted to a single screen, so it's a good idea to make sure that the main play area (or areas) are big enough to distract the player's attention from this otherwise rather serious limitation.

As an example of this parallax effect in action, have a go at the straightforward example program shown in Listing 1. As you can see from the start of the program, the process of scrolling the last two screens is handled by Amal, therefore leaving *AMOS* to get on with the more important task of running your game. The program requires three IFF picture files to work – One 32-colour backdrop image (stars and planets and such) and two 16-colour images for the screens that are scrolled.

IT'S PLAYTIME

Potentially the most powerful method of producing a parallax scrolling effect is the 'Dual Playfield' command. This enables you to overlay one screen on top of another to create a dual playfield display. What's more, the background colour of the screen in front is 'masked out', allowing the graphics displayed on the second screen to show through the gaps.

This may sound like just what we need, but the bad news is that dual playfield displays also have their limitations. One is the number of colours that each screen can use. Because you're effectively combining two screens into one, the Amiga's hardware only allows a maximum of sixteen colours to be displayed on each in low resolution (this drops down to eight in medium and high resolution screen modes). What's more, both screens must be of exactly the same resolution. You cannot, therefore, have a medium resolution screen displayed on top of a low resolution screen.

However, because we're effectively working with two independent screens, the two screens that you use don't have to be the same size. You could, for example, have one that is 320 pixels wide and another that is 640 pixels wide. As long as both are opened in 'LOWRES' or 'HIRES' mode, *AMOS* is kept happy.

Problems do occur when scrolling a dual playfield display though, especially when using the 'Screen Offset' command. Even opening a dual playfield display can produce weird effects, so don't think that you've done something wrong if your dual playfield display produces weird results. Listing 2 demonstrates how easy this function is to use, so give it a try and see! AS

LISTING 2 • LISTING 2 • LISTING 2

```
' *** Parallax Demo 1
' *** Uses Dual Playfield Mode

Screen Open 0,640,70,4,Lowres
Screen Open 1,640,70,4,Lowres
Screen Display 0,128,150,320,70
Screen Display 1,128,150,320,70

Wait Vbl
Dual Playfield 0,1

' *** Load in 2x 320 by 70 2-colour bitmaps
' *** and then copy them into the second half
' *** of the screen.

'Screen 0 : Load Iff "SOURCE:FORE.IFF"
Screen Copy 0,0,0,320,70 To 0,320,0
'Screen 1 : Load Iff "SOURCE:BACK.IFF"
Screen Copy 1,0,0,320,70 To 1,320,0

X1=0 : X2=0

Repeat
X1=X1-1 : X2=X2+1

Wait Vbl
Screen Offset 0,X1,0
Screen Offset 1,X2,0

If X1=0 Then X1=320
If X2=320 Then X2=0

Until Inkey$<>""

Screen Close 0
Screen Close 1
```

like to learn even more so that when I do finally buy an Amiga and *AMOS*, I will be able to get stuck in straight away. Can you therefore please tell me where I could buy the *AMOS* manual and any other books that will help me?

P Law
Chesterfield, Derbyshire

Without wanting to sound immodest, by far the best way to get hold of *AMOS* and its associated paraphernalia is through the mail order pages of *Amiga Shopper* and our sister magazine *Amiga Format*. Turn to page 89 to find out more!

As for books, the only two *AMOS*-related tomes that I've seen are *Mastering Amiga AMOS* from BSB (see the review in last month's issue!) and the brilliant *Amiga Game Maker's Manual* from Sigma Publishing. Both should be available from your local bookstore.

NEXT MONTH

Next month's *AMOS Action* section will be even more exciting than this month's (assuming that such a state of affairs is actually possible). Not only will I be bringing you a comprehensive tutorial on how to use *AMOS Pro's* Interface language, but you can also look forward to more of the exciting news and features that have made *AMOS Action* such a big favourite with *AMOS* users worldwide. So, I'll bid you farewell until next time, and remind you to keep on programming with AMOS – it's the tops!

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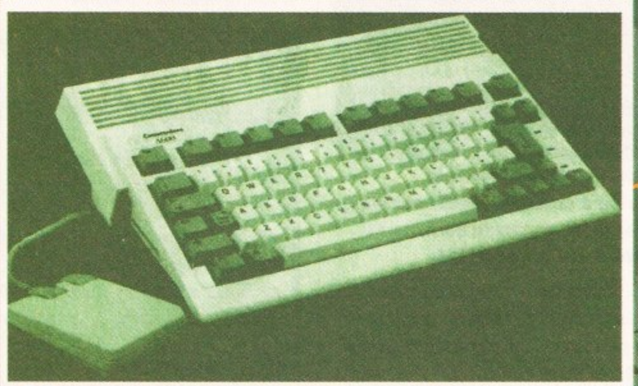
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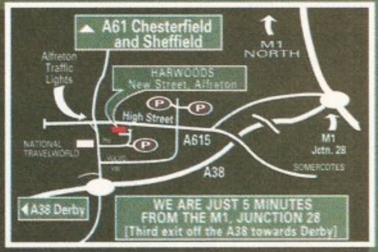
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If you're quite new to the Amiga, you may well be wondering what lies beyond the confines of the Workbench: in other words, what is this mysterious thing called 'AmigaDOS'? Workbench is central to the Amiga's function – but there's a wealth of software out in the public domain (as demonstrated by our regular 'Software for Free' feature) which is just not designed to work from Workbench.

It is possible to get limited access to such software (in Workbench 2 and higher) by selecting 'Show All' from the menu, and double-clicking the program's icon, but many programs require parameters and, unless you know what those are, you're often no better off. Mastering at least the rudiments of the Shell is of paramount importance if you are to get the most satisfaction from using your machine. Over the next couple of months, I'm therefore going right back to basics, with no apologies for any experienced AmigaDOSsers who had to start at the beginning too. (They'll find a special Expert's section at the bottom of this page.)

WHOSE COMMAND LINE IS IT ANYWAY?

AmigaDOS is based around a command line interpreter. Many computer owners will have never encountered anything quite like this before, as 'graphic interfaces' have become the accepted method of communicating with a machine. Even some programming languages are largely based around graphic displays nowadays.

However, it is often easier and faster to communicate your exact intentions by spelling out exactly what you want to do. With this power comes responsibility and, just as careless talk costs lives, a slight error in the written command can spell potential disaster.

So, before doing anything, make a copy of your working Workbench disk (the one you made when you got the machine). Keep this copy disk for tinkering with AmigaDOS commands until you feel at home with the system and what it is capable of. Always use your original disks as masters and keep at least one set of everyday working disks. In that way, you won't accidentally damage a usable Workbench disk and end up virtually unable to use your machine.

Now place the copy of your working Workbench disk in the internal drive and reset the machine – you can do this using either the power switch or, preferably, the reset combination **Ctrl-Amiga-Amiga**. When the Workbench screen appears, open the Workbench disk and locate the icon marked 'Shell' – it could be in the main window or the drawer marked 'System', depending on which version of Workbench you are using. If you have Workbench 2 or higher, you might prefer to 'Leave Out' this icon and 'Snapshot' it on the main Workbench screen for convenient access.

FIRST PRINCIPLES

The origins of the name 'Shell' are as vague as an insanity plea, but in essence it is really just an enhanced command line processor. So, the key question here is this: what exactly is a 'command line' – and why does it need processing?

To answer this, you have to think in fairly simple terms: computers, after all, are quite dumb animals. The Shell works with command lines – instructions. Consider what you might say to a puppy in training: "Sit!", "Fetch!" or "Not on the rug…". A command line is just a sentence and the language is AmigaDOS. The command-line processor breaks your sentence into little chunks and passes it to AmigaDOS – so punctuation is very important here.

At a more technical level, what really happens is this: the Shell reads the first word of the sentence and assumes that it is the command. Any words after that are handled by the command program – the so-called 'arguments' you will read about. Some commands need no arguments, others require several, and more still can have optional ones. So, a short summary of command line components would look something like this:

Command:	**What to do.**
Arguments:	**What to do it with.**
Options:	**How to do it.**

Given this knowledge you can consider how you might ask someone to make a cup of tea:

>Put the kettle on.

to which they may reply:

>You expect ME to get into THAT!

Certain aspects of AmigaDOS are context sensitive, or, in other words, some commands take their arguments by implication and guess what you mean. This remarkably useful facility isn't anything like as complex as it sounds, as the previous example proves. Here, the instruction **PUT (ON)** can mean either 'wear' or 'switch' – depending on the context in which it was offered. More importantly, this simple sentence demonstrates command line parsing in action.

The verb 'Put' could have been an AmigaDOS command, while 'the' is similar to an AmigaDOS keyword with the argument noun 'Kettle'. 'On' is directly analogous to an AmigaDOS command line switch. In

JARGON BUSTING • JARGON BUSTING

Construct – This is a wild bit of jargon that crops up all the time, and is a contraction of the phrase: **con**trol **struct**ure. A control structure is anything which affects the flow of a program, and therefore include things like loops and decisions. The beginning of a control structure is called an 'opening' and the ending is a 'closure'. Therefore we can both 'open' and 'close' a construct – easy isn't it?

DOS – An acronym standing for 'Disk (or Device) Operating System'.

EXPERTS START HERE!

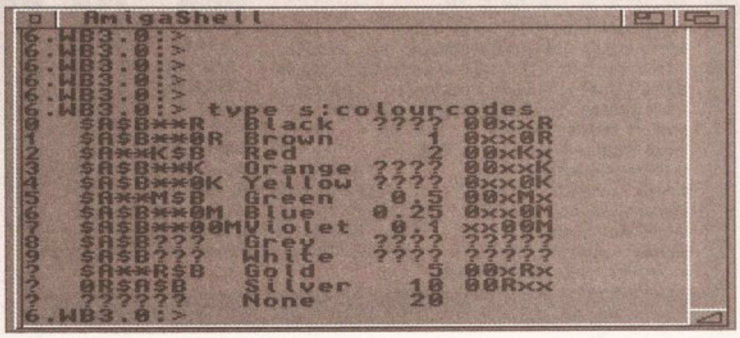
If you've ever dabbled in the world of electronics, you'll know that one of the most tricky things to get to grips with is the resistor colour code. Resistors are manufactured using a set of 'preferred values', which are marked on the body of the component using coloured bands. This month's script will decode any given set of colours and return the component's value. The script is designed to handle three-band resistors, and can recognise values across the range of 0.01 Ohms to 990M, with tolerances from 0.1 to 20 per cent.

Even if electronics is not your thing, this script makes use of some obscure, but powerful, features found in AmigaDOS versions 2 and above. Not everybody knows about these, but they can be surprisingly useful. Just take a look at Step 23 and the description of what it does, and you'll see what I mean.

ENTERING THE DATA FILE

As well as the usual script, this month you will also need to enter a special data file. Each line consists of a number, two spaces, a special string, one or more padding spaces, a colour, one or more padding spaces and the tolerance. The grid at the top is provided as a guide and need not be entered (it doesn't affect the script one bit). Incidentally, the traditional tolerance band for 20 per cent tolerance is Salmon or Pink. You may like to adapt the data file to include this if you work with old radios, TVs or other appliances.

Using 'Rescalc' is very simple: you simply enter the first few letters of each colour code on the three bands (the value for 'tolerance' is optional) and AmigaDOS works out the resistance.



If the data file isn't entered properly, then the calculated resistances won't be correct either

You can, of course, enter the full name of any colour – but this requires more effort. For instance:

```
1>RESCALC Black Brown Red
1K0
```

is the same as:

```
1>RESCALC Bl Br Re
1K0
```

AmigaDOS jargon, this command's synopsis would read:

PUT [THE=<Item>] [ON]

The item could be any kitchen implement: Kettle, Dishwasher, or whatever. The command's template would look like this:

PUT THE/K, ON/S

Don't worry too much if none of this means much to you at this stage – you'll soon pick it up.

A lot of this series concentrates on AmigaDOS command scripts, also known as 'programs'. These may sound complicated too, but in fact a script is merely a sequence of AmigaDOS commands. Let's say you had a script called **MAKE** which was designed to make tea or coffee. Let's also assume that the command **PUT** was actually more powerful and had another option, **IN**, like this:

PUT [THE=<Item>]
[IN=<container>] [ON]

and the program has the arguments:

MAKE <DRINK> [MILK] [SUGAR]

Now we have the following pseudo-code for the **MAKE** script. (The angle brackets "<>" show where a value will be substituted from the command line.)

DRINK/A, MILK/S, SUGAR/S
PUT the Kettle ON
PUT the <DRINK> in CUP
PUT the <MILK> in CUP
PUT the <SUGAR> in CUP
PUT the <WATER> in CUP
SAY "<DRINK>'s made!"

This code is not very dissimilar from a real AmigaDOS command script. Although the commands are made up, many real scripts look just like this – provided you know what the commands do, you can read many of them just as easily.

A PRACTICAL SESSION

Now, double-click on the 'Shell' icon – an operation usually referred to as "opening a Shell". Notice that there's an arrow at the top of the screen – this is called a prompt, and since the default prompt varies from system-to-system, I have adopted a very simple one for this series. When you are required to enter something, the prompt (it may read "1.SYS>" on your system) is shown as:

```
1>
```

It goes almost without saying that when you are typing in commands there is no need to enter this prompt as well.

To get you started, here's an AmigaDOS command you have used many times without even realising it: **LIST**. In its most basic context **LIST** is the AmigaDOS version of opening a drawer and looking at the contents inside. Enter this now:

```
1>LIST
```

Did you press **Return** at the end of the line? That's the big slab-like key at the right-hand side of the keyboard. If you have any model of Amiga except the A600, you can press the **Enter** key on the numeric pad instead. If everything goes according to plan your disk drive will start up and a long list of information will start rolling up the screen. Wait until the listing stops and enter the command again, like this:

```
1>list
```

Notice any difference? There shouldn't be any – AmigaDOS is not 'case sensitive', and does not make any distinction between capital and lower-case (small) letters.

More importantly here, AmigaDOS is being context sensitive with respect to this command. You have clearly asked it to **list** something, but have not been explicit regarding what you wanted a list of. When you first open a Shell from AmigaDOS you are at the root of a tree – the same as if you had just

CRACKING the shell

Whether you're a beginner, an expert, or somewhere in-between, there's something for you in this month's AmigaDOS column. Mark Smiddy explains

HOW IT WORKS

1. Defines the argument template for this script. Note that the tolerance setting is optional.

2-3. Redefine **bra** and **ket** to my favourite values.

4. Sets a default value for the tolerance band. This is optional and does not need to be entered when the script is executed.

5. Sets the global environmental variable, **OK,** to 0.

6. Locates the first colour code in the **colourcodes** file and stores the entire line in the global variable **F**. Note use of the **nonum** option to suppress line numbers. For instance, if the first colour was Brown, the variable would contain:

```
1  $A$B**0R Brown      1%
```

7. Takes the local variable **RC** and adds it to the global **OK**. **RC** is a private AmigaDOS process variable which can be read from but not written to: in fact, it's the return code from the last command: 0, 5, 10 or 20. The significance of this operation (which is not possible in AmigaDOS 1.3) will be seen later.

8. Locates the second colour code and stores the line in the global variable **S**.

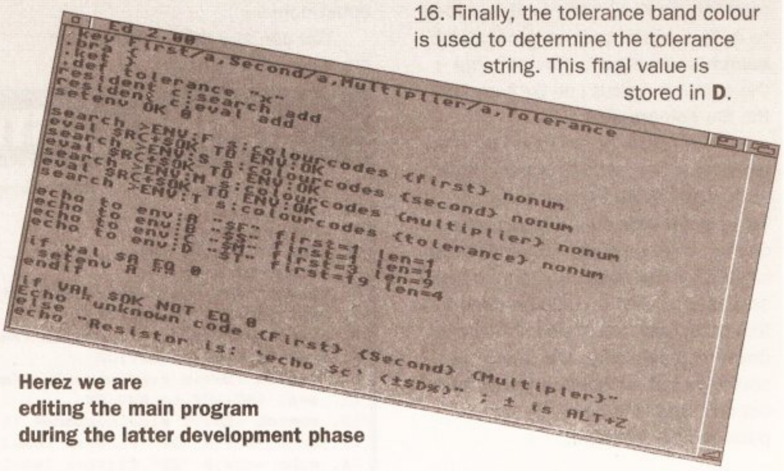
9. See Step 7.

10. Finds the multiplier and sends that to the global **M**.

11. See Step 7.

12. Finally gets the (optional) tolerance colour and stores that in the global variable **T**.

13. The first character of the line held in **F** is read and stored in **A**. This is the number represented by the first colour code. For instance, Brown=1. (Unlike Steps 9 and 11, a repeat of Step 7 is not used here. Don't worry – the reasons for this will be explained shortly.)



Herez we are editing the main program during the latter development phase

14. The first character held in **S** is read and stored in **B**. This is the second colour band.

15. A special string is read from the line held in **M**, based on the multiplier. For instance if the multiplier is Yellow, the variable gets: **AB**0K**.

16. Finally, the tolerance band colour is used to determine the tolerance string. This final value is stored in **D**.

17. If the number held in **A** is equal to 0, control continues at Step 18, otherwise it jumps to 19.

18. A is reset to an empty string.

continued over the page

opened the Workbench disk. (The drawers on your Workbench disk are called 'directories' in AmigaDOS and each Workbench drawer has an AmigaDOS directory associated with it – but not the other way around.)

By entering **LIST** in this way you have listed the contents of the current directory. AmigaDOS has a command to show and change the current directory which is also context sensitive. If you give the command on its own, it returns the current directory; if you supply a valid directory name, AmigaDOS will start pointing to that directory. Try this:

```
1>CD
Workbench:
```

The name returned by **CD** will be the name of your Workbench disk – not necessarily the one shown here. Now try this:

```
1>CD C
1>LIST
```

On some systems the prompt will change to reflect the change: just ignore that for now. This time you get a long list of different names – that's because you have now entered the AmigaDOS command directory. Wait for the listing to finish and start it again, only this time press the **space bar** as the top of the list reaches the window. This pauses the listing – press the **backspace** key to start it again. If you look carefully at the list of files you will notice **LIST** in among them. It's tricky to spot, as this listing is all mixed up – to get a sorted list, use the following instead:

```
1>DIR
```

The Workbench disk you start the machine from also has a special name, **SYS:**. (Note the use of a colon after the name – this means something to AmigaDOS and must be entered where required.) So, you can always get back to where you started by entering this:

```
1>CD SYS:
```

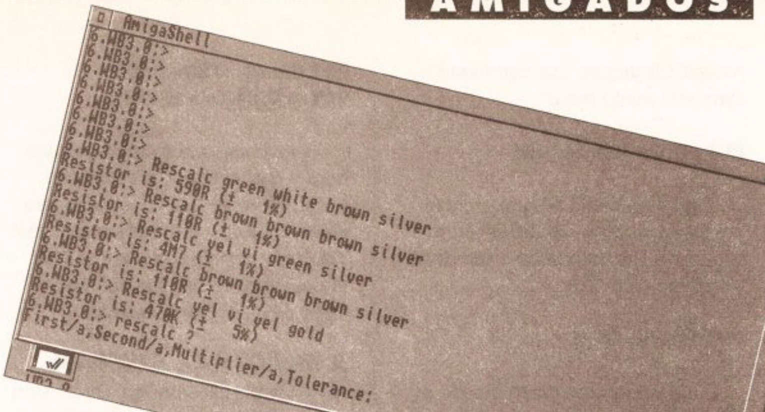
The context sensitivity of AmigaDOS commands means you often have to specify exactly what you mean. For instance, if you want to get a listing of just the directories in the current directory, you have to tell AmigaDOS to:

```
1>DIR DIRS
```

Alternatively, you could just get a list of the files by entering:

```
1>DIR FILES
```

However, entering both options is the same as entering none at all – **DIRS and FILES** means directories and files. There goes that context sensitivity again. Try it!



Resistance is useful! Here you can see the resistor calculator in action

So how do you know which command to use and where? Well, the simple answer is that there is no better teacher than experience. However, few people could ever expect to learn every command inside out, so to avoid having to look in a manual every five minutes, AmigaDOS provides a useful *aide-memoire*. Enter this:

```
1>DIR ?
```

and, hey presto, AmigaDOS spits out all the options available for that command. At this stage you probably won't have the first idea what any of those mean, but you might like to try experimenting with them to see what happens. Provided you always work on a copy of your working Workbench disk – nothing you do can possibly cause any harm. Alternatively, you might like to try entering and using this month's 'expert' script. To enter the script proper and its associated data file you need to type this:

```
1>ED S:RESCALC
```

eventually followed by:

```
1>ED S:Colourcodes
```

Press **Esc** and **X** to finish editing and the following to start the script:

```
1>EXECUTE S:RESCALC Brown ↵
Black Red
```

AS

continued from the preceding page

19. Closes the **if...endif** construct opened at 17.

20. Checks if the value held in **OK** is equal to 0 and if it is, control jumps to Step 22. As promised, all can now be revealed about this variable. As you may recall, **OK** is initialised to 0 at the start of the program and in Steps 7, 9 and 11 the return code from the previous command is added to it. This return code is generated by **search** and will be 0 provided that the colour supplied can be found in the file **colourcodes**.

If the colour is not found then a **warn** condition (**RC**=5) is generated and added to **OK**. At this point the value in **OK** indicates if one or more colours were missing – thus avoiding testing for the **warn** condition in three separate places. It could be done in this other way, but it slows the script down unnecessarily. The tolerance setting is not included (it would have been at Step 13) because the parameter is optional.

21. Displays an error message to explain the colour code was not valid.

22. If control reaches here from 21, it jumps to 24, otherwise it continues at 23.

23. Of all the things I have done with AmigaDOS this has got to be among the most bizarre, so do bear with me while I explain.

This deceptively simple line actually does several jobs in one fell swoop, and eventually ends up printing out the resistor's value. The embedded **echo** statement is executed as the line is displayed because it is enclosed in reverse apostrophes (`).

You can see this in action with the following example:

```
ECHO "The date is: `date`"
```

However, in our resistor calculator script, **echo** is also retrieving the value of a second variable **C**. The contents of **C** are the special string described above for the multiplier, so they might be something like **AB**OK**.

Now, since this string contains items which are variables in their own right, their contents are displayed instead! Two asterix characters provide non-printing space between the variables and the remainder of the string, which would otherwise confuse the variable parser. In other words, if A=4 and B=7 then:

```
ECHO $C
```

gives the desired result:

```
470K
```

24. Rounds off the script by closing the **if...else...endif** construct opened in Step 20.

LISTING • LISTING • LISTING • LISTING • LISTING

```
1. .key First/a,Second/a,Multiplier/a,Tolerance
2. .bra {
3. .ket }
4. .def tolerance "x"
5. setenv OK 0
6. search >ENV:F s:colourcodes {first} nonum
7. eval $RC+$OK to ENV:OK
8. search >ENV:S s:colourcodes {second} nonum
9. eval $RC+$OK to ENV:OK
10. search >ENV:M s:colourcodes {multiplier} nonum
11. eval $RC+$OK to ENV:OK
12. search >ENV:T s:colourcodes {tolerance} nonum
13. echo >env:A "$F" first=1 len=1
14. echo >env:B "$S" first=1 len=1
15. echo >env:C "$M" first=3 len=9
16. echo >env:D "$T" first=20
17. if val $A EQ 0
18. setenv A ""
19. endif
20. if val $OK NOT EQ 0
21. echo "Unknown code: {First} {Second}
{Multiplier}"
22. else
23. echo "Resistor is: `echo $c` ($D)"
24. endif
```

```
S:Colourcodes - numbers MUST be entered

V..V........V......V....
0  $A$B**R  Black  ????%
1  $A$B**0R Brown     1%
2  $A**K$B  Red       2%
3  $A$B**K  Orange ????%
4  $A$B**0K Yellow ????%
5  $A**M$B  Green   0.5%
6  $A$B**0M Blue   0.25%
7  $A$B**00MViolet  0.1%
8  $A$B     Grey   ????%
9  $A$B     White  ????%
?  $A**R$B  Gold      5%
?  0R$A$B   Silver   10%
?  ??????   None     20%
```

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CIX stands for the Compulink Information eXchange. It also stands for the biggest, busiest, and best computer conferencing system in the UK. CIX enables you to hold conversations without the usual constraints you would find in the real world – constraints such as time, distance, or whatever. This means you can join in a conversation on any subject that interests you, at any time of day or night, from anywhere in the world, and with any number of other people. Using CIX, I could ask a question on a very specialised subject, and receive answers from people I would never otherwise meet. It's a gateway into a virtual community, a voyage by computer and modem into the homes and hearts of a whole planet. And, as you've probably realised by now, I think it's great.

But that isn't all there is to it, not by a long way. CIX also offers an excellent electronic mail service, enabling you to send completely confidential mail anywhere in the world. It is also possible to send binary files (programs and such like) to other CIX users using the 'Binary Mail' feature.

Talking of files, CIX has over 50 Gigabytes of on-line storage (yes, that's 50 *Gigabytes*) from which you can download files. Unlike most bulletin board systems, there are no restrictions on the number of downloads you can make. Many files appear on CIX before anywhere else (by virtue of the authors being CIX users) and are sometimes exclusive to the system.

If you read my article in *Amiga Shopper* issue 22 (and if not then where were you?), you will know that CIX also now has a full Internet gateway, which you can make use of for no extra charge. This gives you access to the hundreds of thousands of sites around the world that are connected to the Internet.

And, to top it all, you can send a fax from CIX just as easily as sending a mail message. I have used this facility on many occasions, and very useful it is too.

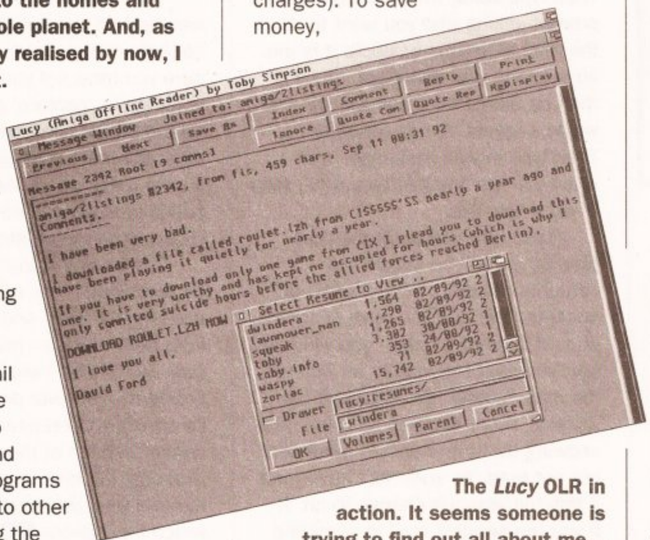
TALK IS CHEAP

Of course, there is a price to be paid for all these services, but thanks to CIX and *Amiga Shopper*, you can now become a registered CIX user for free. See the box on the next page for full details of this excellent money-saving offer.

OK, so let's assume that you've just become a member of CIX, and are now wondering just what to do next. Well, you could do worse than to take some advice from a guy who posted over 50,000 messages on CIX last year – me, Dave Winder, perhaps better known on CIX as 'Wavey Davey'. Ready now everybody – let's follow the Wavey Davey Guide!

ON AND OFF AGAIN

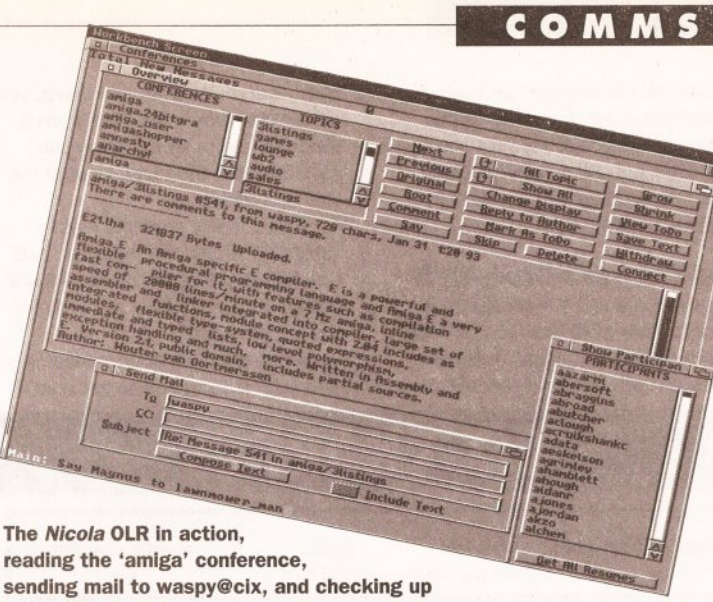
We'll deal with the most important things first, and probably the most important of all is looking after your bank account. Even though *Amiga Shopper* has already saved you £25, CIX still costs money to use (see the box over the page for details of charges). To save money, both in terms of on-line charges and the phone bill, you need some method of being able to connect to CIX, grab everything you want, download it and then do all the time-consuming stuff such as reading and replying off-line. Is this asking too much? Not at all. What you need is an 'Off-Line Reader', hereafter known as an OLR. There are two main OLRs available for the Amiga, so get yourself one of them. In fact, for starters I would advise you to get both and see which you prefer, as these things tend to be a very personal choice.



The *Lucy* OLR in action. It seems someone is trying to find out all about me...

The first of the super OLRs for the Amiga is called *'Nicola'* and was written by Richard Harrison (tricky@cix). This is the one I use and you can get it as **nicola.lha** from the **nicola** conference, in the **files** topic.

The second is called *'Lucy'* and was written by *Amiga Shopper's* very own programming guru Toby Simpson (toby@cix). You should be able to get this from the **lucy.olr** conference on CIX, although I cannot give you the filename as it has not been officially released as I am writing this column. Toby assured me that it would be available by the time you read this.



The *Nicola* OLR in action, reading the 'amiga' conference, sending mail to waspy@cix, and checking up on all the current participants of the 'amiga' conference

Both of these programs will save you a lot of money, and I really mean that. So take your Uncle Wavey's advice and make sure you download them straight away. Not sure how to download a file? Don't worry – all will be explained.

YOU MAY CONFER

CIX operates by being divided into 'conferences', each of which represents an area of interest. In this example I will be using the 'amiga' conference. Each conference is then further divided into areas of more specific interest, known as 'topics'. In CIX shorthand the '3listings' topic of the 'amiga' conference would be written as 'amiga/3listings'. The '3' prefix on the 'listings' topic merely denotes that there have been two other listings topics which have been filled to capacity with Amiga program files. To join a conference you use the **join** command from the main prompt. So to join the 'amiga' conference you would type **join amiga**.

When first joining conferences you will find that you will automatically get a lot of old messages. This is because there is a default which gives you the last 100 messages in each topic of each conference you join. This can be rather excessive, especially when you are just starting to dip your toes in the water. If you are using one of the OLRs then you can easily reset this default from within the program. For example, using *Nicola* you would just alter the 'autorecent messages'

box in the 'cix settings' section of preferences. You can also do this while on-line by altering your profile. If you are not going to be using an OLR then mail me at CIX, and I'll explain the procedure.

NO CIX – NO COMMENT

If you are reading a message and want to reply to it, then you will need the **comment** command. Just type **comment** after reading the text, and you will be prompted to leave a message of your own. By commenting, your message will be marked as being in response to that particular message, thus making it easier to follow the flow of a conversation (known as a 'thread' in CIX terms). If you have something to say which isn't connected to another message, use the **say** command instead.

Whichever method you are using, you will need to type a full stop '**.**' on a separate line to let CIX know you have finished, then type **send** at the 'action' prompt.

Some topics contains files – 'amiga/3listings', for instance. Just type **flist** and a listing of all files will pop up on your screen, all ready for you to download.

As an example of downloading files I will tell you how to get hold of the off-line reader program *Nicola* (but it could just as easily be *Lucy*). First of all you will need to join the 'nicola' conference, and when asked which topic you want reply **files.** By the way, you can use the **switch** command while within a conference to change topics. Now you should be in **nicola/files** so type **flist** to display the files listing. The file you want is called **nicola.lha,** so to download it you should use the file download command **fdl,** which tells CIX you want a file. Type **fdl nicola.lha** to start downloading the OLR. Once the file is downloaded you will need to unarchive it, which you can do using the *LhA* program, as provided on last month's *Amiga Shopper* cover disk.

So, by now you should be able to join conferences, post messages, and download files. Something else you will want to do, no doubt, is post confidential mail messages. Wavey's Guide will show you how, and as a test you could send some mail to me, letting me know you have taken up the *Amiga Shopper* offer and have arrived safely.

CIX CHARGES

Connection rates:	off-peak	peak	monthly minimum
	£2.40 per hour	£3.60 p/h	£6.25

Fax machine billing:	UK	European	outside Europe
	30p/page	70p first page extra pages 45p	£1.75 first page extra pages £1.25

Peak time is Monday – Friday, 08:00 to 17:00.
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(All prices are excluding VAT).

CATCHING THE POST

At the main prompt, you must first type **mail** to get into the mail system. Then type **send**, which will generate a prompt asking who you want to send the mail to. In this example it is me, so respond with **dwindera**. You will then be asked for a subject title – I would suggest 'Amiga Shopper'. Then type in your message, and when you are finished type a full stop '**.**' on a new line.

If you type **status** at the mail prompt you will be shown the contents of both your 'in' and 'out' baskets. The fact you have sent mail should be shown here – you will see who you sent the mail to as well as the mail number, the date and the subject. There will also be a full stop showing that the mail has been sent but not read. As soon as I have read it this full stop will change to an 'R'. If you are sending mail to someone outside CIX there is no way of knowing if it has been read or not from within CIX, and the full stop will be replaced with an 'X'.

JOINING UP

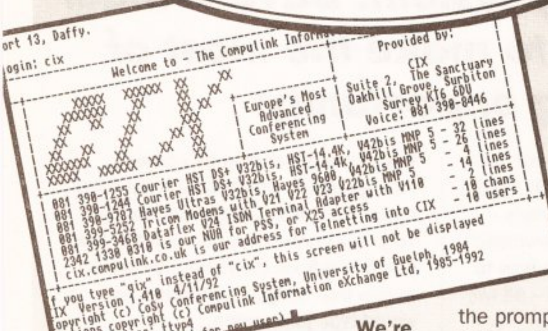
There's a wide choice of conferences on CIX, but the following are bound to be of particular interest to you. Join the 'amigashopper' conference and you will be able to leave feedback for us about the magazine, send us letters, and of course speak to our Editor, Cliff. Also make sure you join the 'amiga' conference for everything you need to know about the Amiga – and more. All the experts are there, including most of the *Amiga Shopper* Answers Panel, along with hundreds of free files for you to download.

To find out what else you may want to join, you need to look at the conference list. To do this first make sure you have set your comms software to 'capture' (so you can read it off-line) and then type **show** all at the main prompt. You will be shown many pages listing all the public conferences on CIX, together with a short description of each.

Don't worry if you find this all a bit confusing – you will soon get accustomed to it. And remember that I am here to help – just send me mail on CIX and I will help with your problems wherever possible. I'll also be covering CIX-related matters in a regular section of this column, including interesting conferences, Internet use, and much more. So watch this space! AS

FREE REGISTRATION TO CIX

CIX and Amiga Shopper are very pleased to be able to offer you free registration to CIX (normally £25 plus VAT). This offer is available until midnight April 30, 1993



We're talking telephone numbers here – the CIX welcome screen has all the lines you'll need

To take advantage of this special offer, follow these instructions:

Set the parameters in your communications software to 8 data bits, no parity, 1 stop bit ('8N1'). Set your modem to the fastest speed it will support – CIX supports speeds up to v32bis.

Dial CIX on ☎ 081 390 1244. Once you're connected to CIX follow the prompts you are given, as follows. Note that words in bold (like this: **wibble**) are the responses you should type in.

The first prompt you will see is 'login' to which you respond **cix.** This will result in the welcome screen appearing, as shown in the picture.

You will then see the following prompt: "Nickname? (Enter 'new' for new user)" – to which you respond **new**. Next will follow several pages of useful information, including details of on-line charges. It is a good idea to get your comms software to capture the registration process to disk so you can read it all later at your leisure. Eventually you will be asked for your name, which you should enter.

The next thing that happens is that you will be told a nickname has been generated for you. This takes the form of your initial followed by your surname. So, for example, Harold Abbish would get a nickname of 'habbish'. If you want your own nickname, then answer **NO** when asked if this is acceptable, and enter whatever you fancy.

The second most important part comes next – a password. Your password will need to be between four and eight characters long, and is case sensitive, so "magnus" will not be the same as "MAGNUS". Choose a password that is not obvious, and make sure you can remember it without having to write it down. You want to keep your account secure, after all.

After your address and phone number, you will be asked for a credit card number. This is how you are billed for your on-line charges. For details of these charges, see the 'CIX Charges' box above.

Finally, the most important part: you will be asked for any special code. At this point enter the word **amshopper**. Make sure this is done correctly, as this is what will get you free registration.

Shortly after completing the registration procedure, you will receive a comprehensive user manual in the post.

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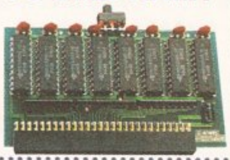
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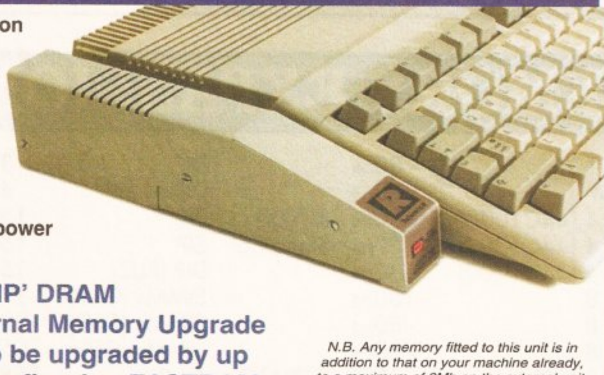
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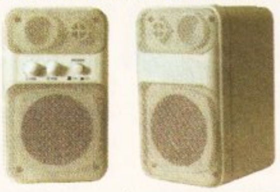
You *can* improve software compatibility on your A500 Plus! By fitting our ROM switcher, you can alternate between the Kickstart 2 already resident and another version of Kickstart ROM chip, giving you the freedom of choice. Fitting is very simple indeed, and requires *no soldering* or special technical knowledge. Fitting allows two methods of switching; either by keyboard reset, or by an external toggle switch. **N.B. Kickstart ROM not supplied. A500 Revision 5 boards will require circuit modification.**

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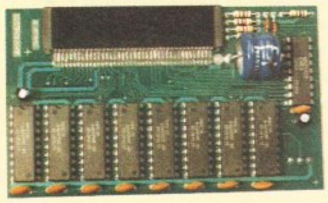
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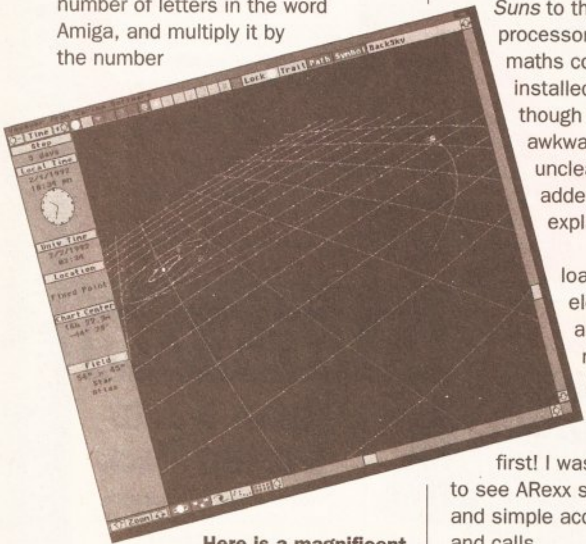
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Evesham Micros • NEW LATE NIGHT SHOWROOM OPENING UNTIL 7PM, WEDNESDAY TO FRIDAY

Forty-two, as we all know, is the ultimate answer to the meaning of life, the universe and everything, and the super-computer which deduced this answer must have been (or is it 'will be'?) a future Amiga. And how, you may ask, do I know this?

Simple! Just count up the number of letters in the word Amiga, and multiply it by the number of letters in the name of the CPU manufacturer. Add the number of people who got an Atari ST this Christmas – and what do you get?



Here is a magnificent example of how *Voyager* can demonstrate the path of the deep space probe Giotto as it moves through the orbits of the inner planets of our solar system, and continues on to meet the outer bodies. This whole scene animates, showing the flight path of Giotto, and its eventual encounter with Halley's Comet

Moving swiftly from the realms of science fiction to science fact, many schools are now taking advantage of technological facilities which would have been inconceivable 20 years ago. I know of schools which are linked to meteorological satellites, enabling them to download weather maps and offer forecasts to local radio and TV stations. Many schools also have telescopes, and the investigation of the cosmos is rapidly becoming a significant part of the Science Curriculum.

SMALL STEPS, OR GIANT LEAPS?

Voyager and *Distant Suns* are two Amiga packages primarily intended to help you explore the universe. They offer broadly similar facilities, but each has particular attributes which make it special.

This month I want to take you through the two programs, and show how you can expand on their features to develop a greater understanding of outer space, as well as learning a little more about the versatility of your Amiga.

DISTANT SUNS

Distant Suns comes in a beautifully presented package containing three disks and a manual. If you are to obtain the best results, the system requirements will be rather steep. A standard 68000-based A500 with 1Mb will run the program, but it is tediously slow – to enjoy *Distant Suns* to the full requires a faster processor, and in particular, a maths co-processor. It can be installed on a hard disk, though I found the process awkward and the information unclear – until I found an addendum inside the box explaining the procedure.

The manual contains loads of information on elementary astronomy, and I found myself reading the whole thing cover to cover before I even looked at the disks. Now that is a first! I was particularly pleased to see ARexx support, enabling quick and simple access to macro scripts and calls.

On loading, *Distant Suns* presents you with a 180-degree vista of the night sky. The first thing to do is set the vista to your own locality. This is done by entering the latitude and longitude co-ordinates for wherever you happen to live. Once this is done, there in all its glory is the view that you can see tonight – or indeed on any night, as a time and date feature allows access to future and past scenarios.

Two modes are offered to work in: Planetarium mode, and Local Co-ordinate mode. The former is the default mode, and by far faster, but the second mode, as described earlier, does show your own view of the sky, and makes the package so much more relevant.

STAR PERFORMANCE

Constellations can be switched on and off, giving both the names and outline drawings of the shapes. 'Deep sky', or non-stellar objects outside our solar system can be also be indicated, including star clusters, galaxies and nebulae.

'Field of View' allows the user to choose the angle of sky seen at any time, from 3 to 180 degrees, and 'Landscape' will draw an artificial horizon which can be customised to match your own night-time view.

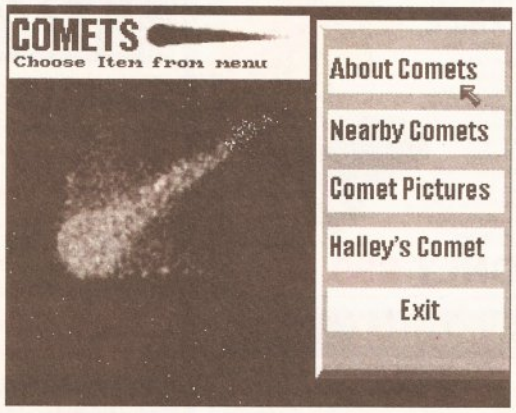
'Lookdown' displays a view of the solar system from above. The planets are subdivided into three categories: inner, middle, and outer, and the their respective orbits can be advanced to show juxtapositions.

The 'Move' and 'Search' options allow movement to any chosen location, or to any desired object, while 'Viewpoint' emulates the visual perspective of a space traveller, allowing you to watch the view as you travel outwards from the Earth and look back at the solar system.

Several other menus add further features such as 'Earth Shadow', 'Skylight Twinkle' and 'Star Trails'.

SPACE TRAVEL

The feature I like best about *Distant Suns* is the 'Anims' option. Here, a requester enables you to create frames which can demonstrate anything from a lunar eclipse to a journey from Pluto to Saturn. A collection of IFF images on the third disk allows you to include some fairly spectacular graphics digitised from real shots in space.



You could easily put together a complete multimedia presentation using these programs and *AmigaVision*, and then leave it running for other people to appreciate your handiwork

VOYAGER

Quite different in its graphical interface, and frankly rather superior, *Voyager* is a much more friendly package than *Distant Suns*. Again, it consists of three disks, and a manual packed with stacks of information for any budding Patrick Moore. This time I installed the software, and before I knew it, an hour had passed as I happily traced the route of assorted comets, space-probes and moons.

Voyager is very easy to use, and the ability to analyse the effects of time and distance is handled in a sensible and practical way. All of the features available in *Distant Suns* are present – with the exception of ARexx. One particular feature I like in *Voyager*, and a boon to journalists, is the facility for saving IFF screens of the current event directly from the pull-down menus. This particular feature, together with the ARexx support in *Distant Suns*, is what gave me the idea for taking the two packages further.

GETTING YOUR ACT TOGETHER

One of the best features of the Amiga is that you can often use several packages together to produce a result greater than the sum of the contributing parts.

So, what we have here are two brilliant packages, and I find myself thinking: "What can I do to get the most out of both of them, and take the combined information further?"

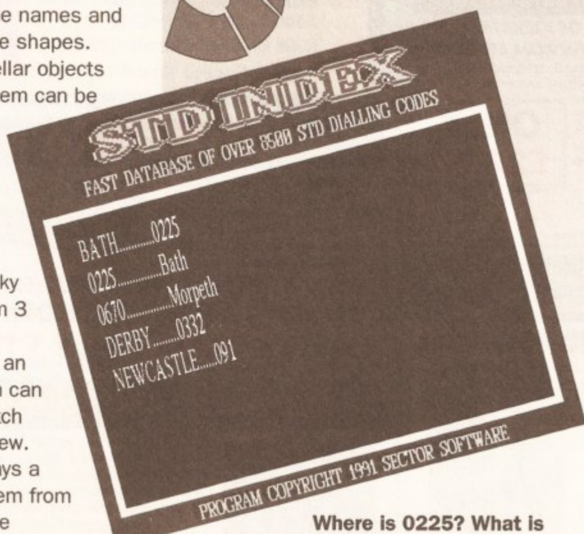
The answer lies in using another package to combine their qualities,

Sector Solutions

I often find it fascinating to look through the smaller advertisements in *Amiga Shopper*, to see the beginnings of companies which could turn into major organisations. There are some real gems to be found in these pages – it was in these ads that I found Switchsoft, and the impressive range of 'Control' equipment which we featured in a couple of *Education* articles last year.

My most recent discovery in this area came when I noticed an advert for Sector Software. This company sells a number of products, two of which I thought were worth drawing to your attention.

First up: *STD Index*. This is a database which enables you to



Where is 0225? What is the STD code for Bath? Who knows? Sector's *STD Index* program does

and thus introduce another dimension to the equation. My choice was to use *AmigaVision*.

Combining *AmigaVision* and *Distant Suns* to create an interactive presentation that anyone could enjoy is the ideal basis for producing a highly imaginative project. One impressive example which springs to mind would be a simple point-and-click interface showing the history of Halley's Comet. You could create a presentation based on this subject which first introduces 'background' information on comets, saying what they are, what they are made of, and so on.

AmigaVision could then address *Distant Suns* through the ARexx port to show the path of a particular comet in relation to other celestial bodies. Zooming in, panning, and all other built-in features could be controlled by ARexx to depict the nature of a comet's behaviour amongst our solar neighbourhood. Following this (after a fancy fade or wipe!) there could be a few pictures of famous comets that can be seen from Earth, with a little bit of information regarding each one.

WHERE'S HALLEY?

Later, an animation could be displayed using *Voyager*, explaining how the space probe 'Giotto' intersected Halley's Comet. Further information could be displayed on this topic, showing all the necessary procedures involved in sending out a mission like Giotto. A little background information to reinforce the significance of Halley's Comet could also be useful – 1066, William the Conqueror, and all that.

All this interesting information could be compiled using *AmigaVision* into an intuitive point-and-click interface, enabling users to see what they want to see at the touch of a button. As the *Distant Suns* manual suggests: "You may create a new interface using a combination of *AmigaVision* and a touch screen for a museum exhibit."

Presentations can be put together which stretch multimedia programs to their limits. For example, an animation could be created showing the path of the Saturn V rocket to the moon and back, with all the various stages of the mission supported by sampled sounds of radio messages and digitised pictures of the Apollo lander craft. The sky really is the limit! AS

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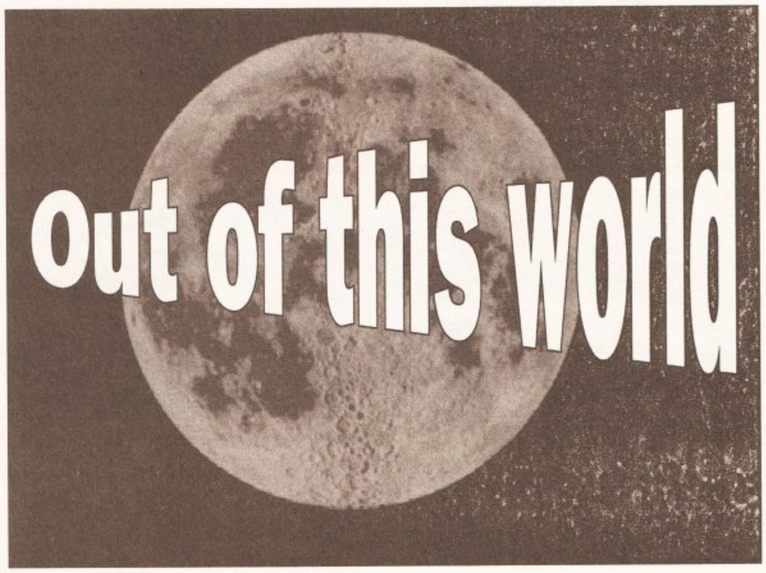
Product	Documentation	Features	Ease of use	Speed	Price	Overall
Distant Suns	●●●●○	●●●●○	●●●○○	●●○○○	●●●●○	●●●○○
Voyager	●●●●○	●●●●○	●●●●○	●●●○○	●●●●●	●●●●○

SHOPPING LIST

Distant Suns £39.95
Voyager £39.95
Both available from:
HB Marketing
☎ 0753 6860000

Amiga-Z88 LINK £25
STD Index............................... £14
by Sector Software
☎ 0772 452414

Below: An example of the hi-res pictures available with *Distant Suns*. These are digitised images taken from real photographs supplied by NASA – just the ticket for a presentation on the Apollo moon missions. You could even load this image into *DPaint IV*, grab it as a brush, and, using the [+] and [-] keys, create an animation of the approaching moon. For the very best results, add a little digitised music from Holst, and put it all together with *AmigaVision*



Stand by for lift-off! Wilf Rees journeys into space with two astronomy programs, and then comes down to earth with Sector Software's budget product range

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Product	Documentation	Features	Ease of use	Speed	Price	Overall
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Amiga-Z88 Link	●●●●○	●●●○○	●●●●●	●●●○○	●●●●○	●●●●○

THE MISSING LINK?

It is becoming increasingly common to see students using notepad computers in schools, either as a means of recording data, or as a diary or calculator. Sadly, in the absence of an Amiga portable, it's not always straightforward to transfer data from one of these notepads to a 'proper' computer, like the Amiga most right-thinking teachers keep on their desks.

To this end, Sector Software sells a Z88 to Amiga link. The Z88 is an A4-sized portable, and weighs about 2 lbs. Originally the brainchild of Sir Clive Sinclair, it has been around for a few years now – you sometimes see Z88s being sold off cheaply in electronics stores. However, the design has stood the test of time – the recent Amstrad NC-100 notepad is a close relation. I use a Z88 regularly, and indeed am writing this article on it right now.

In the past I have had to dump down any work done on the Z88 to PC, and then transfer it across to my Amiga. This link could be a tremendous asset for people like me, and certainly for students who have their own Amiga at home.

The package comes complete with the hardware link, software and manual. A special lead connects between the serial port of the Amiga and the 9-pin port on the side of the Z88. The software is so easy to use that I had no need to even look at the manual – once the Z88 was set for 'Import/Export' mode, the software in the Amiga recognised this, and registered 'Receiving'.

Data transfer is not particularly fast, sending 1500 words in about 10 seconds, but the quality of transfer is faultless. Text arrives as ASCII characters, all ready to be imported straight into a word processor or DTP program.

This is a neat piece of kit which does everything it says it will. I would recommend it to anyone who wishes to extend the capabilities of their equipment, as it will give a new dimension to the ability of their hardware to share information.

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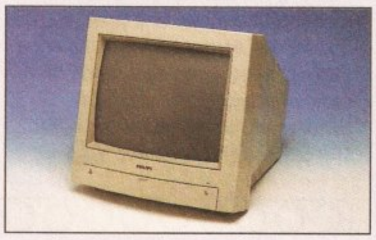
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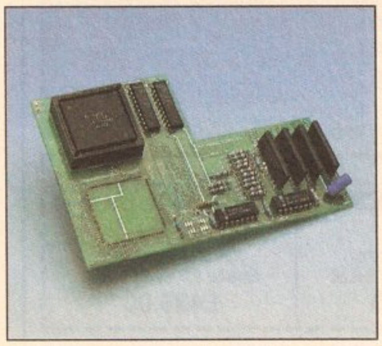
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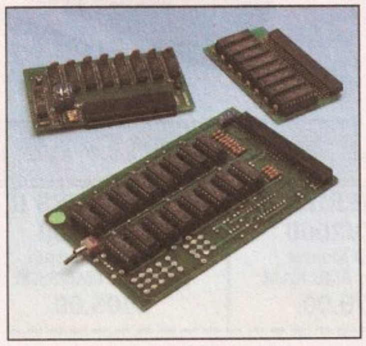
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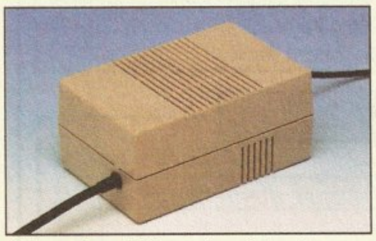
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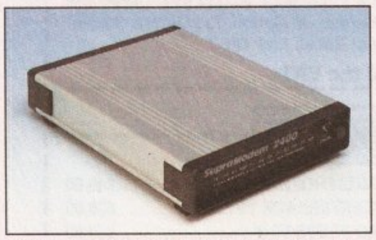
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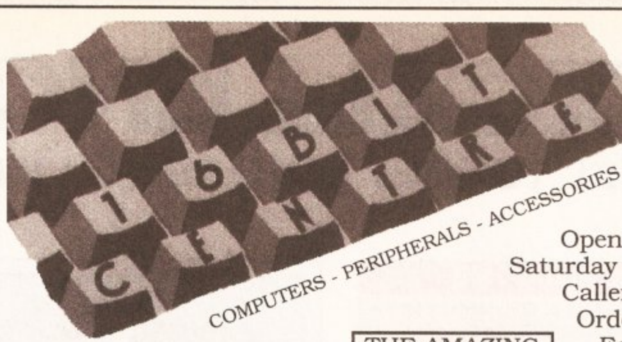
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Sailing through

True or false? In this month's programming tutorial, Toby Simpson goes right back to basics and explains the art of making decisions in C

In the last thrilling installment we discussed perhaps one of the most difficult concepts of C programming, the pointer. If you recall, a pointer is a special variable type which, rather than actually holding a value, holds a pointer to the memory location where that value is stored.

This month, we're back-stepping a little and looking at some of the fundamental workings of C. You'll need to be familiar with these before you can sit down and write your first top-selling application.

We'll start with the **if** statement. A programming language consists of three fundamental processes: sequence, decision and iteration. Sequence is going from one step to another, decision is saying "if <a condition> occurs, do <something>". Iteration is the same as repetition, and involves doing something a number of times.

Every programming language must have the facilities for all of these steps. We've already dealt with sequence and iteration, by writing some simple programs and using the **while** command. So now let us discuss decisions. The format of the **if** command in C is like this:

```
if (a condition is true) do
something
```

For a start, let us get our definition of 'true' together. What C does is evaluate what is present between the two brackets after the **if** statement (this is the 'expression'). That result will either be zero, or not zero. If it is zero, the result is said to be 'false', while a non-zero result is 'true'. Take this simple example:

```
if (2==2) printf("Hello ↵
world\n");
```

If the expression is evaluated to 'true' then it prints 'Hello World' on the screen. In this case, 2 does equal 2, so the result is true and the string is printed. If we'd said:

```
if (2==5) printf("Hello ↵
World\n");
```

then no string would have been

Through the gates of logic

Inside your computer are millions of tiny electronic gates. These gates are responsible for every operation the computer carries out, but work according to very simple principles. In essence, 'logic' gates (as they are called) open to let information through if a given set of conditions becomes true.

For example, the 'and' gate has two inputs and one output. If both the inputs are binary 1, or on, then the output is 1, or 'true'. For any other combination of inputs, the output is 0, 'false'.

The 'nand' gate is a 'not' 'and', and quite simply 'nots' the output of the 'and' gate. This means that putting a 1 and a 1 on both inputs provides a 0 output ('false'), and any other combination gives a 1. In C you have the option of using these basic building blocks, and others to achieve what you want. For instance, the 'and' operator is **&**, and just like the '=' operator, there is a double version called **&&**. Take a look at this code example:

```
if ((counter == 5) && ↵
```

LISTING 1 • LISTING 1 • LISTING 1

```
/* Program to input a string, and test to see if it meets
 certain conditions, showing the use of the if statement. */
#include <stdio.h>
#include <string.h>       /* Include string functions */
void main(void)
{
   char test_string[256];
   int length;
   printf("Enter a string beginning with a Z and more than 4
in length.\n");
   scanf("%s",test_string);
   /* Get the length of the string by calling strlen() */
   length = strlen(test_string);
   /* Show a message if you entered nothing */
   if (!length) printf("You entered nothing\n");
   /* Show a message if it was only just bigger than 4 chars
*/
   if (length == 5) printf("String was 5. You could have made
it longer\n");
   /* If the length is 2 or 4, show a message */
   if ((length == 2) || (length == 4)) printf("It was a 2 or
a 4, not good enough I'm afraid\n");
   /* Check if it was right, if so, show it otherwise show an
appropriate message */
   if ((length > 4) && (test_string[0] == 'Z'))
      printf("Well done.\n");
   else
      printf("You failed. Your string was %ld long and
started with a %c.\n", length, test_string[0]);
}
```

LISTING 2 • LISTING 2 • LISTING 2

```
/* Demonstration of the switch statement */
#include <stdio.h>
#include <string.h>      /* Include string functions */
void main(void)
{
   int test_number;
   test_number = 0;
   printf("Enter a number from 1 to 4\n");
   scanf("%d", &test_number);
   /* Depending on the value, perform an action */
   switch(test_number)
      {
      case 1:
         printf("This is the one condition\n");
         break;
      case 2:
         printf("Two oh yes.\n");
         break;
      case 3:
         printf("Three three\n");
         break;
      case 4:
         printf("This was the four!\n");
         break;
      /* This is done if no other conditions are fulfilled */
      default:
         printf("You didn't enter a number from 1 to 4\n");
         break;
      }
}
```

printed. This is because 2 does not equal 5, and the expression evaluates to 'false'.

It's at this point I'm going to introduce the logical 'not' operator, represented in C by the exclamation mark character, '!'. Now, this may sound complicated, but it's not. The 'not' function is a single, simple logical operation – it turns binary 1s into 0s and vice-versa. Basically, if you apply a 'not' operator to a 'false' value, you get 'true', and so on. The silicon chips inside your computer are full of small logic gates, each performing a logical operation such as 'not'. See the table below for more information if you're interested.

So, let's re-write the last line we did with a small change:

```
if (!2==5) printf("Hello ↵
World\n");
```

This time the string 'Hello World' would have been printed. What has happened is that 2==5 was evaluated to be equal to zero ('false'), and then we inverted it (using 'not'), and it became 'true'. You may not have seen the point of all this just yet, so let's bring back something we have talked about before, the string. Last month, we saw how to call functions and deal with the result, by opening a library and calling a function from it. So, this time, let's write a small program to input a string and show some messages, depending on its length and content. The program appears in Listing 1, on the left.

This example shows a number of if statements in action, and uses the 'and' and 'or' operators, **&&** and **||**. See the box above on 'logic gate' operations for more information about these two. It also shows uses of 'not' which we have already discussed, and introduces the **else** statement for the first time. The **else** part of the **if** command only gets executed if the other bit does not – in other words, if the expression evaluates to 'false', then the **else** bit is run. It's a good way of reducing the number of **if** commands in a program and making you code much more readable.

What happens if you want to execute more than one statement after an **if** command? The following won't work:

```
if (length == 5) printf("It ↵
was 5\n");
    printf("Oh yes it ↵
certainly was.\n");
    printf("This is a right ↵
mess.\n");
    printf("This won't work ↵
as you expect\n");
else
    printf("It was not 5");
```

The compiler won't compile this. Only the first **printf**, on the same line as the **if** statement, will be carried out if the expression **length==5** evaluates to 'true'.

If you want to execute groups of instructions using **if**, then you must enclose them within curly brackets. This means that something like the above example could be corrected like this:

```
if (length ==5)
    {
    printf("Hi\n");
    length = 10;
    }
else
    printf("It was not 5\n");
```

This is quite important, as we're going to be seeing a whole lot more of these curly brackets over the next couple of articles.

This leads us on to an alternative way of taking decisions. Imagine you have written a program that has a window with ten buttons in it. When a button is pressed, you have a small routine which returns a value from 0 to 9 in a variable. You then want to do a different thing for each button. With what we already know, this can be done fairly easily, by using ten **if** statements. However, C has a much better way of doing this sort of thing: the **switch** and **case** statements. Let's write another program which accepts a number from 1 to 4, and does a different thing for each possible entry – as shown in Listing 2, on the left.

> **"A programming language consists of three fundamental processes"**

There are a number of things to be said about this program. First, we have the **switch** statement itself. This indicates what we are using as our test number. Then for each case we wish to address, we need one **case** statement followed by the value we're interested in, followed by a colon. Then we can have as many commands as we want, followed by a **break**. There is a special 'case' too, called **default**. This is executed if none of the other cases occurred.

This month we've talked about decision making in C. Next month, we'll be looking at the **for** and **do** statements, and then we'll go on to talk about structures. After that we'll be ready to write our own Amiga utility, so stay tuned! AS

EQUALITY AND ASSIGNMENT: MORE EQUAL THAN OTHERS

One of the most common and difficult-to-trace bugs in C programs is a confusion of the equality operator '==' and the assignment operator '='. Although they look similar, they mean very different things. It is easier to understand if you learn to 'read' them at an early stage. When you're looking at something you've typed, read '=' as "becomes" and '==' as "is equal to". When you come across a line you're not sure of, read it to yourself in this way, and all should become clear.

Let's try it now, with the following bugged line:

```
if (counter = a_variable) printf("Hi\n");
```

This is potentially dangerous. What we're trying to say is: if the two variables **counter** and **a_variable** are the same, then do something. What we're actually doing is putting the contents of **a_variable** in **counter**. This would cause all sorts of nasty bugs. Reading it out loud gives: "If (**counter** becomes **a_variable**) print Hi." If you replace the '=' with '==', then it correctly reads "If (**counter** is equal to **a_variable**) print Hi."

The problem with other languages, particularly BASIC, is that they make no differentiation between the two operations, which do totally different things. This teaches bad programming, which turns into confusion and longer learning periods when the user tries to understand the difference. To be honest, C does not help by using a single equals sign and a double one, making it easy to mistype them. Other languages, Pascal for instance, do this better.

```
(another_counter == 6)) ↵
printf("Hi\n");
```

C evaluates the expression like this. Assume that **counter** does equal 5, and **another_counter** does equal 6. Both the sub-expressions in brackets will evaluate to 'true'. Then we simply say "if ('true' and 'true') evaluates to 'true', print Hi".

Languages like BASIC do this with the 'and' and 'or' statements. You may have never realised what they actually do, but now you know. Below are the 'truth tables' for some of the common functions, 'and', 'nand', 'or' and 'nor'. Each of these four examples have two inputs (A and B) and one output. (Q).

		'and'	'nand'
A	B	Q	Q
0	0	0	1
0	1	0	1
1	0	0	1
1	1	1	0

		'or'	'nor'
A	B	Q	Q
0	0	0	1
0	1	1	0
1	0	1	0
1	1	1	0

The 'nand' gate is of particular interest to electronic engineers as it is the basic logic building block. It's the simplest to build, and can be used easily to make all of the others.

WHAT TO INCLUDE

'Include' files are essential. These files contain all the function definitions and declarations that you will need in order to write C programs. Unfortunately, unless you have bought a commercial C compiler, such as *SAS C 6.1*, then you almost certainly won't have the necessary files. In order to follow this series you are going to have to obtain the includes if you have not already done so.

To get the latest Commodore include files, send a cheque for £25, made payable to Commodore Business Machines, to:

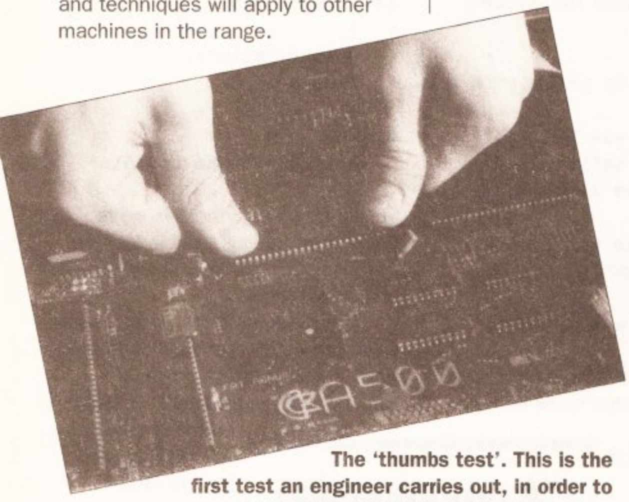
Sharon McGuffie, Commodore Business Machines (UK) , Commodore House, The Switchback, Gardener Rd, Maidenhead, Berks SL6 7XA

and ask for the 'Native Developer's Toolkit'. The toolkit is a four disk set comprising the include files for both assembly language and C, for Workbench 2. These work just fine on both 1.3 and 3.0. It also has the 'autodocs' on disk, which describe every single function in the Amiga's operating system, plus example code, utilities, linker libraries and all sorts of other goodies.

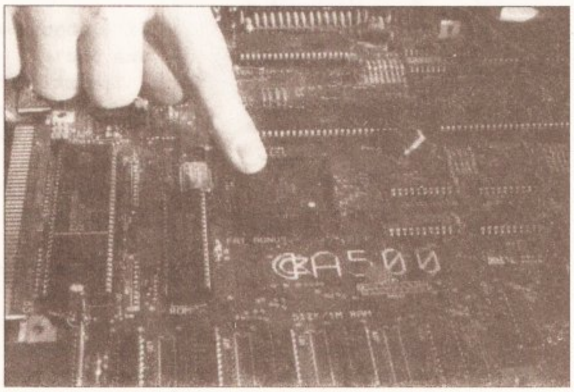
If you're serious about Amiga programming, you should also ask about becoming a registered developer, and you will have further information sent to you about that.

Last month we looked at the range of Amiga peripheral repairs that you can safely attempt at home. But someday it may become obvious that something is sadly wrong with the old Amiga itself, in which case the thought of a steep professional repair bill can be quite daunting.

However, you shouldn't despair, because help is now at hand. This month we are going to be looking at the Amiga's internal workings, and examining a number of useful tests and repairs that you can do yourself in this area. Again, as in last month's column, I will be concentrating mainly on the Amiga 500, although most of the repairs and techniques will apply to other machines in the range.



The 'thumbs test'. This is the first test an engineer carries out, in order to make sure all the ICs are firmly in place



Thermal testing is not a precise means of determining a fault, but experienced engineers can use this technique to seek out unusual hot-spots on an IC

FOLLOW THE ORDER

As we saw last month, if your Amiga is dead to the world then the very first thing to check is the power supply. But if you've checked this (it's best to try it with someone else's A500 to make absolutely sure) and you still have no joy, then this is what is referred to as 'Failed Initialisation'. When the Amiga is switched on, it goes through a series of internal checks before the Kickstart logo appears. These checks are identified by a series of coloured screens, and they check the internal configurations of things like the keyboard, RAM, and ROM. (The actual colours and functions will appear in the 'Technical Addendum' at the end of this series.)

A successful initialisation is identified by three factors: the power light goes on; the Kickstart logo appears; and the disk drive starts clicking. If any one of these is absent, then you should suspect an internal fault. As with the power supply, you can eliminate the monitor and associated leads as possible sources of the fault by trying them on a friend's computer.

DOWN AND OUT

Now, before surgery can commence, there are still a few alternatives we should check before opening up our patient. These are:

1. Switch off the power. Ensure that the pins on the power supply plug are straight, and that the plug is pushed firmly home. Switch the power back on, and reboot.

2. Switch off the power, and remove any trapdoor memory expansion. Power up again, and reboot. If the Amiga initialises, either the edge connector or the expansion is faulty.

3. Switch off the power, and remove any printer leads. Put the power back on, and reboot. If the Amiga initialises, you may have a faulty printer, lead, port, or internal integrated circuit ('IC').

4. Switch off the power. Remove any Sidecar hard drive. Put the power back on, and reboot. If the Amiga initialises, then the hard drive, expansion bus, or internal ICs may be faulty.

GOING IN

Having done all the preliminary tests, we are now fairly confident that the fault lies within the machine itself. Often the nature of the fault can be traced back to what you were doing with the machine just before it gave up the ghost. I will deal with this in the third article, which will include a flow chart for identifying certain problems, but, for now, we are faced with surgery.

The Amiga 500 is a very robust and well-built machine – dismantling it requires the collection of tools I mentioned in the first article. You'll also need two electrical screwdrivers, and a pair of long-nosed pliers. Before we begin, do be sensible, and make sure you have a working area that's appropriate for the handling of your computer's delicate insides.

If it's the dining room table, don't start 15 minutes before a meal is about to be served. Similarly, forget the oil-smeared, dimly-lit workbench in the garage, surrounded by rusty nails and solidified open paint tins. You will need a well-lit, large, flat surface, preferably with a clean cloth over the area, and a couple of containers for holding screws and the like.

POINT OF NO RETURN

Right, we are ready. Pick up the Amiga, and turn it upside down. Along the front you will see two silver screws and an oval sticker marked, 'Warranty Seal'. If your machine is less than a year old, stop now and take the Amiga back to your dealer, who will fix it for free. Once this seal is broken, your warranty is void, so be warned.

To get the case open, the three screws at the front of the machine will need to be removed. Here, you may find that you are one of the unlucky ones who bought an Amiga during Commodore's 'awkward' period. Instead of the usual Philips cross-head screws, some Amigas have 'star' screws, and this is where the electrical screwdriver comes in. It is possible to take them out with an ordinary screwdriver, but it is not easy – I suggest you replace the lot with simple self-tapping screws of the same size.

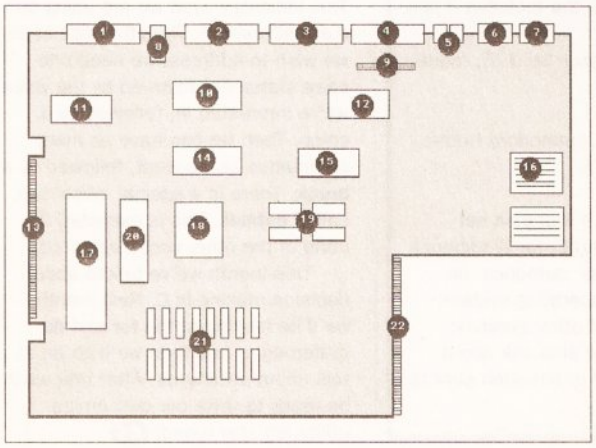
Once these screws are removed, we move to the rear of the machine. Again there are three screws, of which the centre one is covered by the warranty seal. Remove these, and this completes the initial separation of the A500 case. The top half will now lift off to reveal the innards. To separate the two halves requires quite a bit of force, so don't be too cautious in giving the job a little muscle.

The keyboard assembly can now be removed. To do this, follow the 8-cable harness from the assembly to the centre aperture in the metal screen. Just above the point where the cables enter the plug is a cable clamp. Grasp the clamp between two fingers, and gently ease the plug off the connecting pins on the motherboard, using a left-to-right rocking movement. There are four retaining lugs moulded into the base of the Amiga case. Lift the keyboard up and away, and it should come clear of the main unit.

RADIATION SCREEN

A tin-plate metal screen covers the motherboard. This is intended to meet the strict US radio emission regulations, and will be the next thing that we remove. First, take out the two Philips screws at the front of the screen. Just behind the expansion bus you'll find two further screws. On removing these, a protection plate is released. Put this plate to one side, making sure you remember how it was originally fitted.

If you look around the top edge of the screen, you will see four 'fold-over' metal plates. These need to be lifted to the vertical position. Now the top of the screen can be gently



THE INSIDE GUIDE

1. Monitor connector.
2. Parallel port.
3. Serial port.
4. External drive port.
5. Stereo sound output.
6. Joystick port.
7. Mouse/Joystick port.
8. Power input.
9. Internal floppy port.
10. Odd CIA 8520 I/O.
11. Denise 8362.
12. Even CIA 8520.
13. Edge connector.
14. Paula 8364.
15. Gary U5.
16. Revision data.
17. 68000 CPU U1.
18. Agnus 8370.
19. Data path.
20. Kickstart ROM U500.
21. RAM chips.
22. Expansion connector.

Work SHOPPER Workshop

It's your turn to operate! In the second part of his Do-It-Yourself repairs guide, Wilf Rees shows how to check and replace your Amiga's internal components

lifted out, and placed to one side. The main motherboard of your Amiga will now be visible, and fault-finding can commence.

THUMBS DOWN

The first test we carry out is the 'thumbs test'. Simple but often surprisingly effective, this involves going around all of the plug-in integrated circuits (also known as 'IC's), and, with a thumb on each end, applying sufficient pressure to ensure the IC is firmly located into its holder. You should of course also make a quick visual inspection to check that all of the pins are correctly inserted into the appropriate hole, and not bent or missing the slot.

Now identify the 7-pin connector which takes the keyboard plug. Slip the keyboard behind the retaining lugs on the base of the case, and replace the keyboard plug, ensuring the plug is correctly covering all of the pins. Orientation of the plug, as is the case with most connectors, can often be determined by looking at the way the cable naturally lies. If you are in doubt, the black cable goes to the left-hand side. The power supplied to your Amiga from the power supply is only low voltage, so we can safely reconnect the monitor, mouse and power supply. Switch on. If initialisation occurs, then the problem is solved. If not, then it's on to the next test.

THE HEAT IS ON

The next routine is a thermal test, occasionally referred to as the 'melted finger' syndrome. While this is not an extremely accurate test, it can often be a very good indicator of a chip's general health. The basic principle is that all ICs generate heat to some degree or another. Processors in particular get pretty hot – sometimes hot enough to burn. This is why you will often find miniature fans fitted over the top of CPUs, especially in add-ons like accelerator cards.

To carry out this test, switch on the Amiga, and leave it for a couple of minutes to warm up. After a few minutes, the ICs will have warmed up and their temperatures should have stabilised. Using the tip of a finger, move over all of the surface of each IC in turn, feeling for any hot spots. Keep repeating this process over several minutes.

What you are looking for is any IC which does not stabilise, but continues to increase in temperature in a localised region. If this occurs, you should strongly suspect that this component is faulty. You then have two options: either ask a friend if you can try his or her IC in your machine, or go out and buy the component as a direct replacement.

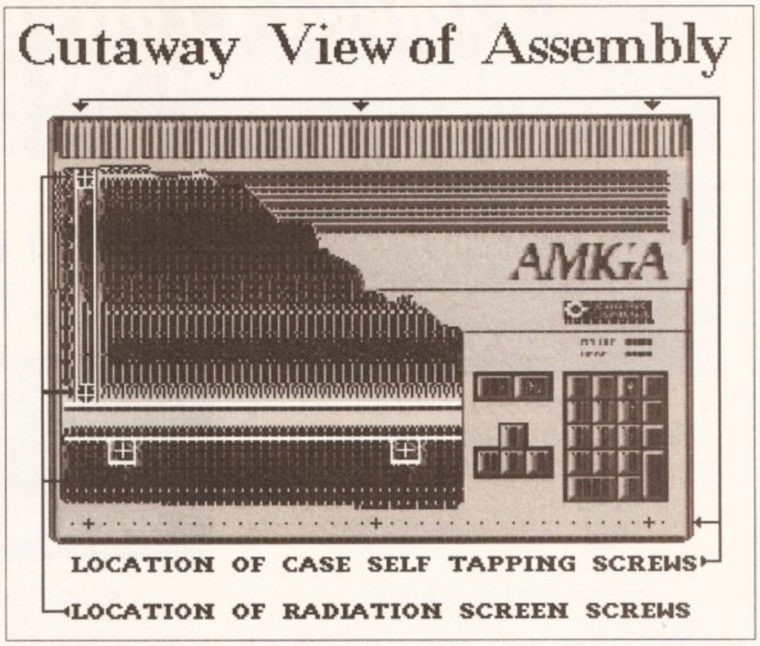
The procedures I have described here will enable the average user to have a go at the main non-initialisation tests. The principal ICs to check are: the 68000 processor, the Kickstart ROM, Agnus, Paula, Denise and Gary, as shown in the diagram on the facing page. If you have gone through all these tests, made suitable replacements, and initialisation still does not occur, then I'm afraid that you have more or less run out of options. It may be that one of the smaller components on the motherboard is faulty, or that the motherboard itself has a fault, in which case, you are better off seeking help from your dealer.

PROBLEMS AT POST-INITIALISATION

You may find that your Amiga is getting past the initialisation stage, but once the Workbench logo is loaded from ROM, specific problems may appear after this. Let us begin with by far the most common problem that appears at this stage, and the repair needed for between 40% to 60% of all Amiga faults. The two little culprits are the ICs known as the CIA 8520s. If you seek out the Component Reference picture in the first article, you will be able to identify them quite easily. The function of these two little beauties is to deal with the parallel port connector, joystick/mouse connectors, front panel LED, internal control lines, keyboard, serial port, floppy drives, and internal timing.

SERVES YOU RIGHT!

If most people followed the instructions printed in the User Guide, these components wouldn't suffer half the damage that they do. Unfortunately, and I am as guilty of this as anyone, short-cuts often prevail. The User Guide clearly indicates that when connecting external devices, the Amiga should always be switched off. So, every time you think about plugging in a printer lead, or connecting a modem, or even a mouse, you run the risk of blowing one of the 8520s.



Removing the screws which hold together the case and the radiation shield will void your warranty. If your Amiga has 'star centre' screws, it's more convenient to replace them with ordinary self-tapping screws of the same size

Have you ever run into the fault where the mouse will only work in one axis, and refuses to travel the other way? Even a new mouse doesn't cure the problem. This fault arises surprisingly often, and can be prevented simply by following the instructions in the manual. Under these circumstances, the response of the mouse is a fair indication that one of the two 8520s has blown. The test to check if this is the case is quite simple. Swap the two ICs around, and see if the other mouse axis is now functioning.

GIVE IT A TRY

There is no earthly reason why these checks and repairs should be beyond the abilities of any practically-minded Amiga owner. So, don't be afraid to have a go – if the worst comes to the worst, you can always and dig out your old VIC-20 from the attic! AS

NEXT MONTH

In the third part of this series, we will be looking at floppy drive leads and routine overhauls. I hope that so far you have found the knowledge of how to tackle your own repairs useful, but more importantly, I hope the need never arises to use it!

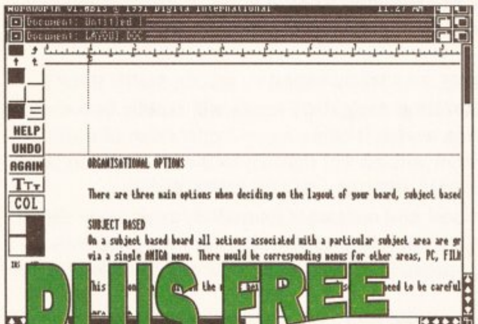
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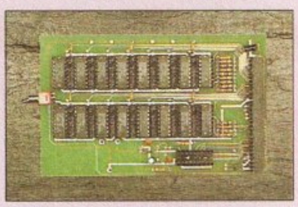
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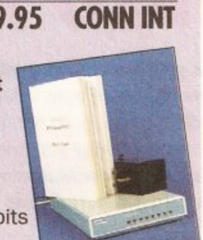


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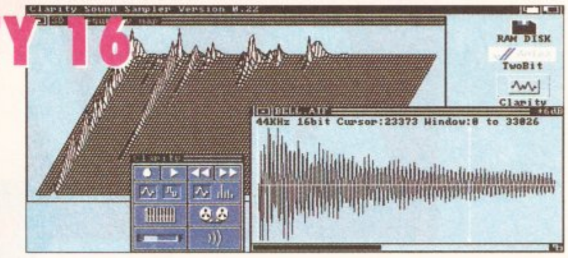
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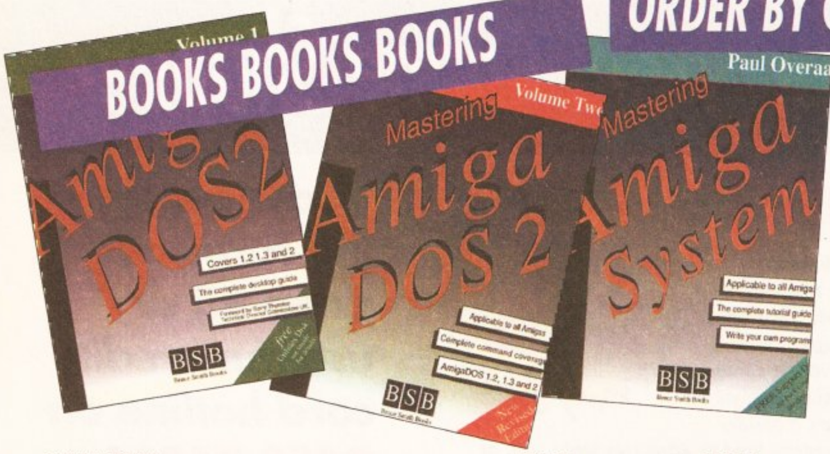


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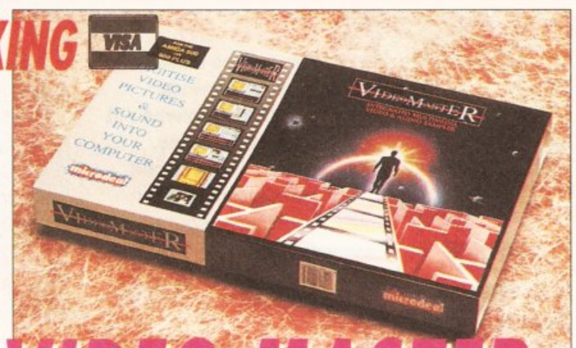
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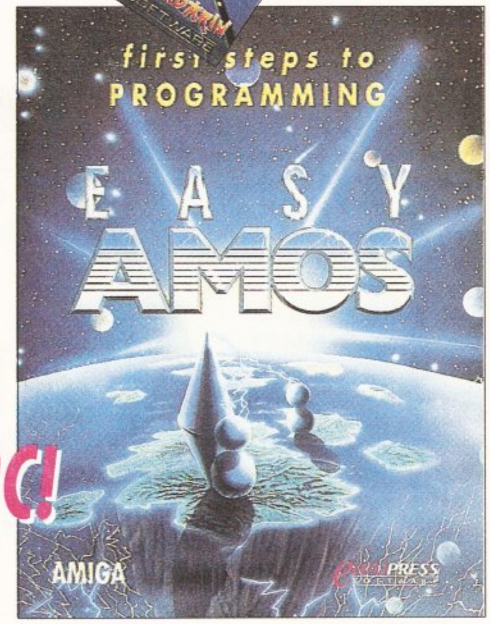


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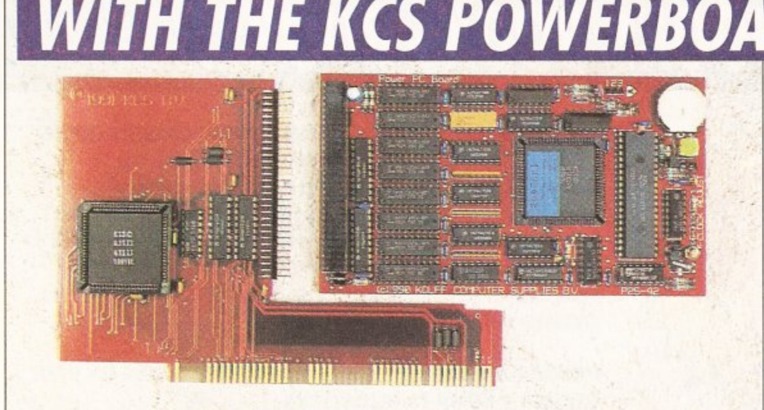
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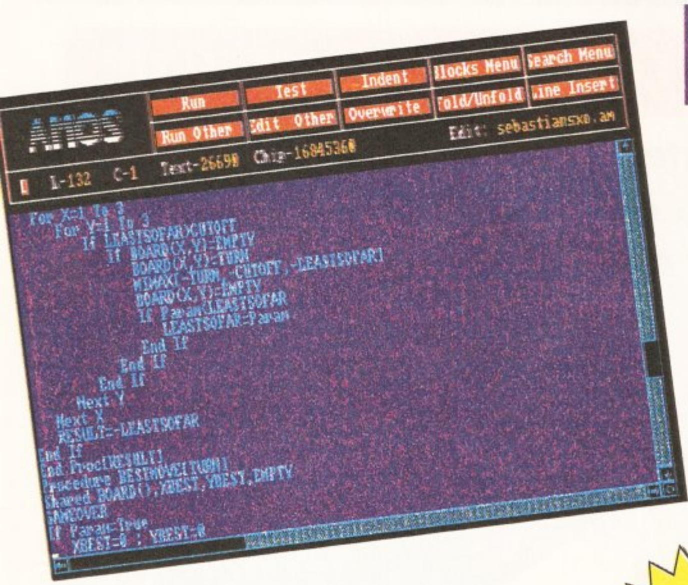
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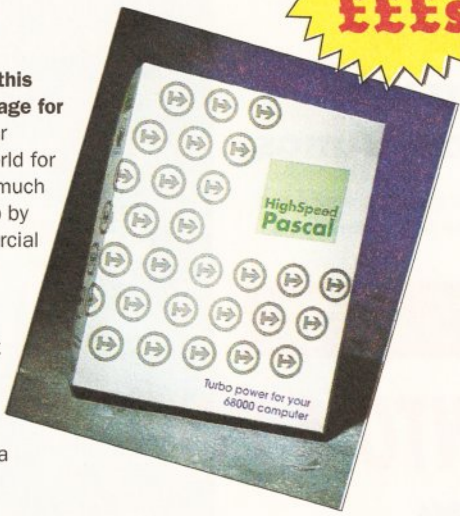
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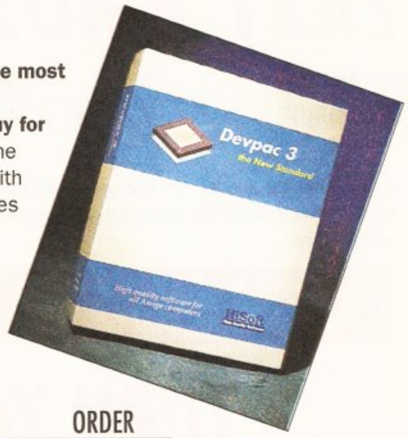
HISOFT PASCAL



At last there's a version of this popular programming language for the Amiga! Pascal is popular throughout the academic world for its clarity and precision, so much so that it has been taken up by large portions of the commercial sector. Find out why it has done so well with HiSoft's blindingly fast version, *HighSpeed Pascal*. A full set of files are included for accessing the Amiga's operating system, as well as an integrated editor and a debugger.

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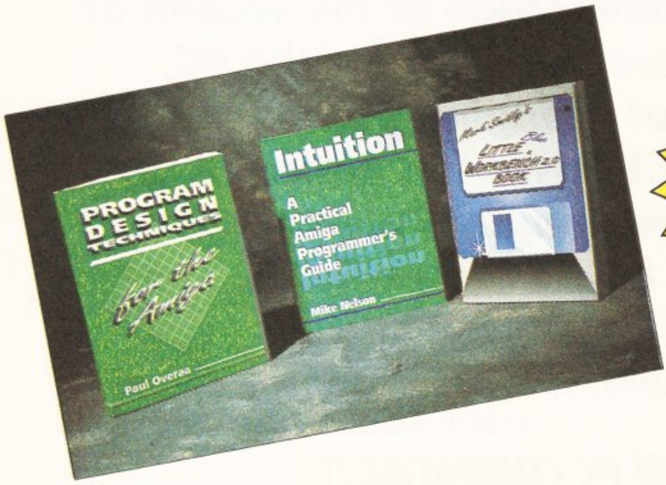
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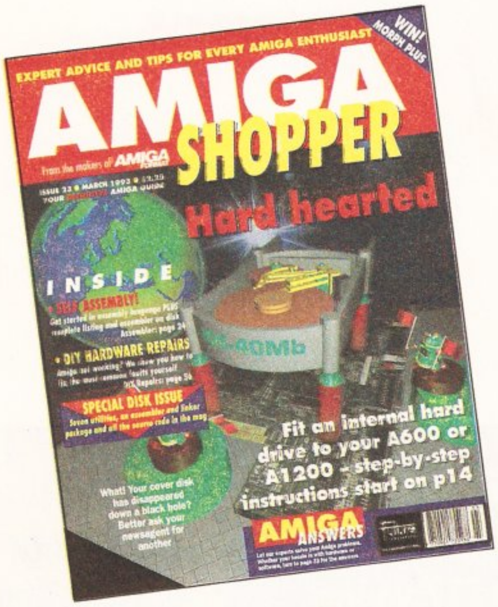
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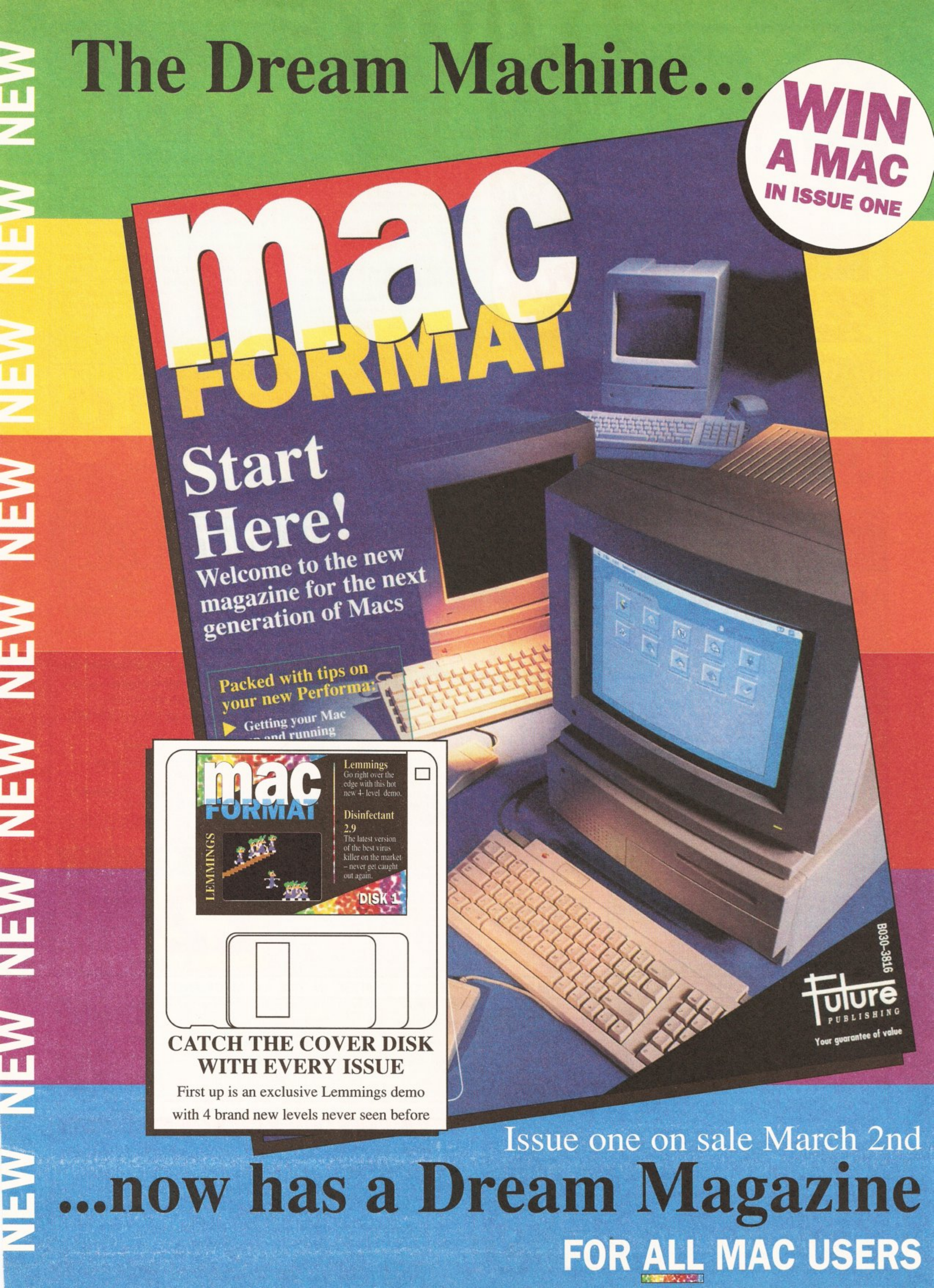
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AREXX FOR ALL



Jason Holborn shows you how to pull your strings apart, put them back together and a whole lot more besides. Be warned – no string is safe!

Over the last couple of months or so we've covered some pretty heavyweight topics. Decision making, loops, conditional loops, procedures and arguments – to name but a few. But, so far, our ARexx scripts haven't actually done very much. In order to make our scripts a little more useful, we'll now move onto the subject of string manipulation or – for the more poetic among you – how to do things with strings.

In general, the ARexx command set is quite minimal when compared to other languages, but string manipulation is one area where ARexx really shines. Whether you need to extract words from a string, strip leading or trailing characters or search for every occurrence of a word within a string, you'll find ARexx more than man for the job. Compared to the rather limited string manipulation commands offered by BASIC, ARexx is a veritable power house.

WORD POWER

ARexx provides a whole string (pardon the pun) of functions that allow you to work on strings on a word-for-word basis. These functions can be particularly useful when processing sequential files. Say you had two sequential files containing information that you'd like to combine into a single file. These functions would enable you to cut out the information that you required from those two files without having to worry about the length of individual entries. You would just tell ARexx which words you were interested in within the two files and it would then handle the nitty gritty of extracting the words in question.

Not convinced? OK, let's take a look at the functions available, and I'll explain what each one does.

Delword: As its name seems to strangely suggest, the **Delword()** function deletes words from a string. It gives you pretty extensive control over which words and how many are deleted from a string. It needs to be passed three parameters – the variable name of the source string, the position of the first word to be deleted within that string and the number of words to be deleted. Say, for example, you had a string called **nochance** containing four words 'Jason Holborn For President' and you (perhaps understandably) wished to delete the last two words. You would therefore call the **Delword()** function using the following line:

```
result = ↵
delword(nochance,3,2)
```

This would tell ARexx to delete two words from the string nochance, starting at word three. The resulting string ('Jason Holborn') would then be stored into the variable 'result' for further work. Note that virtually all of the string functions that we'll be covering don't work directly on the source string, so our source string ('Jason Holborn For President') is thankfully left intact.

Find: Now here's a powerful function. The **find()** function searches through a string for the first occurrence of a substring (a single word, if you like) contained within the source string that you feed it. This could be useful if you need to get string data from a file on a conditional basis – say, for example, you only wanted those entries that had the word 'sausage' in them.

The **find** function requires two parameters – the name of the variable containing the source string and the variable containing the substring (or, for more direct results, the substring itself). The position of the substring within the string is then written back into the variable defined before the function call.

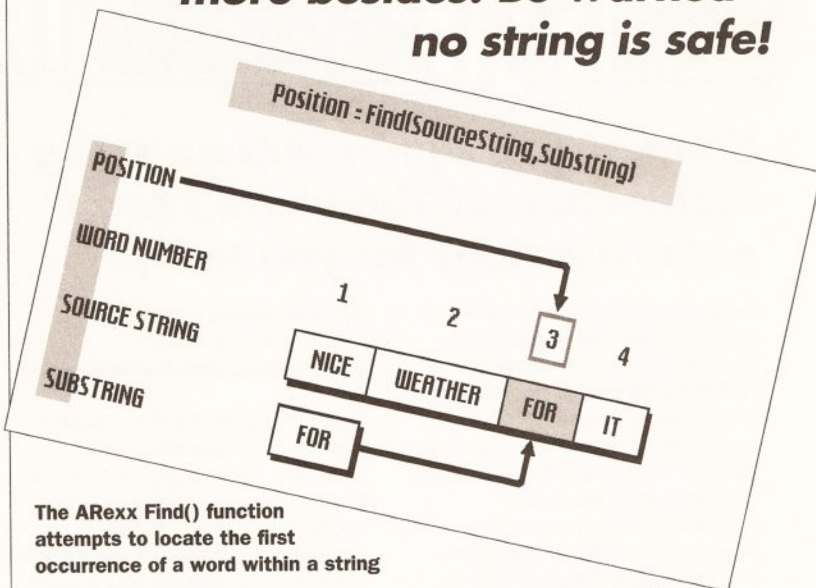
As always, remember that these functions work on a 'word for word' basis, so the position returned by the **find** function is specified in terms of whole words. A returned value of '2', for example, means that the substring is the second word within the source string.

```
position = ↵
find(sourcestring,'Jason')
```

In this particular example, the **find()** function would look for the first occurrence of the substring 'Jason' within a string called **sourcestring**. If it was found, the position of the substring within the source string is written into the integer variable **position**. If the string isn't found, then **position** will contain 0.

Subword: Here's another potentially powerful function. **Subword** allows you to extract a given number of words from a source string, therefore providing a more flexible alternative to ARexx's **delword()** function. It requires three parameters – the source string name, the start position where word extraction is to start and the number of words that you'd like to extract. Here's the **subword()** function in action.

```
result =
subword(sourcestring,3,2)
```



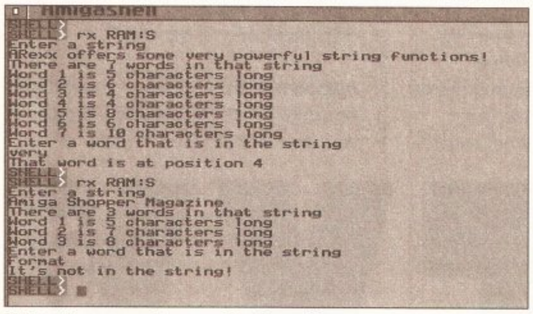
The ARexx Find() function attempts to locate the first occurrence of a word within a string

LISTING • LISTING • LISTING

```
/*
  String functions demo
*/
say "Enter a string"
pull string
count = words(string)
say "There are" count "words in that string"
do a = 1 to count
        length = wordlength(string,a)
        say "Word" a "is" length "characters long"
        end
say "Enter a word that is in the string"
pull word
position = find(string,word)
if position ~= 0 then
        say "That word is at position" position
else do
        say "It's not in the string!"
        end
exit
```

In this example, the **subword()** function would extract two words starting at the third word within a string called **sourcestring**. The resulting two words are then stored in a variable called **result**.

If you just need to extract a single word, then a considerably easier solution would be to use the ARexx **word()** function which, as the name suggests, extracts single words from strings. All you need to do is to tell the function the name of the source string and the position of the word within the string, and the **word()** function then extracts that word. For example, **result = word(sourcestring,2)** would extract the second word from **sourcestring** and store it in **result**. Clever eh?



When it comes to counting words and letters, this month's sample ARexx script has got it all sewn up!

Wordindex: A slightly different version of the **find()** function is the **wordindex()** function that, instead of returning the position of a substring in terms of words, returns the location of the substring as a character position. Say, for example, you wanted to know where within the string **sourcestring** the second word started as a character position. All you'd have to do is to pass the **wordindex()** function the name of the source string and the position of the word that you're interested in. To make things a little clearer, here's an example:

```
charpos = wordindex('Hello ↵
There Matey',2)
```

This example would return a value of 7. Starting from the first character in the string, the **wordindex()** function counts along until it gets to the first character of the second word (in this case 'There') and then returns the position of this first character.

Wordlength: An extension to the **wordindex()** function, this works in a very similar manner to the 'LEN()' function in BASIC. However, it's considerably more flexible – instead of being restricted to returning just the entire length of a string (you can do this in ARexx using the **length()** function), the **wordlength()** function can return the length (in characters) of a single word within a string. The syntax of the **wordlength()** function is pretty simple – all it needs is the name of the variable containing the string and the position of the word that you're interested in. Once again, here's an example:

```
length = wordlength('Jason ↵
Holborn is great',2)
```

The above example would return the length of the second word (in this case, a fine surname) as an integer value which is then stored in the variable **length**. Can you guess what the result would be? Yep – 7.

Words: Regular readers of *ARexx For All* will remember this function from a couple of months back. What it does it to tell you how many words there are in a string. This can be particularly useful when you need to split a sentence up into individual words, and its syntax couldn't be simpler. All it needs is the name of the variable containing the string and that's it. The number of words within that string is then passed back as an integer value.

Clearly, many of these functions are fairly self-explanatory to use – by all means try them in your own scripts and see. Or, if you're not feeling too adventurous, try this month's example script (on the preceding page) for starters! AS

NEXT MONTH • NEXT MONTH

Phew! What a lot of commands we've covered this time around. With all this theory out of the way, next month's issue is the one to watch out for – because then we'll be opening files, writing things to them, reading from them and a whole lot more besides. See you then!

MORE STRING FUNCTIONS

Can't get enough of ARexx string manipulation? Then here's some extra functions for you to try!

Compress: Removes a list of characters from the source string. For example, **result = compress ('ABCDE','BC')** would tell ARexx to remove all occurrences of the characters 'B' and 'C' from the string 'ABCDE'. 'ADE' would then be written into the variable **result**. The **compress()** function can be very powerful indeed. Say, for example, you had a list of filenames that all ended with '.BAS'. Providing the filenames themselves didn't contain any of these four characters, you could use the **compress()** function to strip away the extension.

Delstr: Deletes a specified number of characters from a source string. It needs three parameters – the usual source string name followed by the number of characters to be deleted and where within the string the deletion process is to begin. The syntax is: **result = delstr (sourcestring, start, numberofchars)**.

Insert: The opposite to the **delstr()** function is the **insert()** function which, not surprisingly, can be used to insert one string anywhere within another. Its syntax is slightly more complicated – instead of just a single variable name, **insert()** also requires the name of the variable containing the string to be inserted, followed by a value denoting where insertion should start (as expressed in terms of characters – for example, the 5th character along) and the number of characters (although this is optional).

The syntax is: **result = insert (sourcestring, insertstring, start, length, pad)**. If you specify a length value greater than the total number of characters in **insertstring**, insert will automatically pad out the remaining characters either with spaces (the default) or with the character you define in the pad parameter – handy for text formatting.

Overlay: This works in a very similar manner to the 'overwrite' feature offered by most word processors. **Overlay** takes a string and literally places it on top of the characters already in the source string, effectively removing them. It requires five parameters – the source string name, the name of the string to be overlaid, the start position, the number of characters to be overlaid and, once again, a pad character. If the number of characters you specify is greater than the number of characters in the overlay string, the **overlay()** function will pad out the string in the same way as the **insert()** function. Here's its syntax: **result = overlay(sourcestring, overlaystring, length, start, pad)**.

Strip: The **strip()** function does just what you'd expect... it strips characters or, to be more precise, it strips leading or trailing characters from any string. What's more, it can also be used to strip every occurrence of a particular character (or list of characters) from a string, making it a very powerful command indeed. The syntax of **strip()** looks like this: **result = strip(sourcestring, mode, list)**. The **sourcestring** parameter is pretty obvious, but the optional **mode** parameter is worth discussing. Because **strip()** can work in three modes, you have to tell it which you would like to use by specifying either 'T' or 'L' – which strip trailing and leading characters respectively. To make things more complicated, the mode parameter can also be 'B' which will strip *both* leading and trailing characters. If you leave this blank, the **strip()** function will simply strip out all occurrences of a given character list.

The **list** parameter simply tells the **strip()** function which characters you would like to have removed. If, for example, you had a string that started with four hash ('#') symbols , you could strip them away by setting the **mode** to 'L' (for leading) and then specifying the hash character in the **list** parameter. No problem!

Upper: A very simple and (dare I say it?) self-explanatory function that does basically the same job as BASIC's 'UPPER$' command and C's 'Strupr()' function. The syntax is similar too – just a single parameter needs to be fed to the function with the result written back to the variable defined at the start of the function call. For those of you that really need it, using **upper()** looks like this: **result = upper(sourcestring)**.

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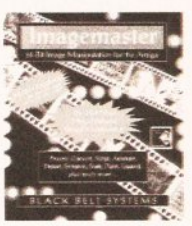
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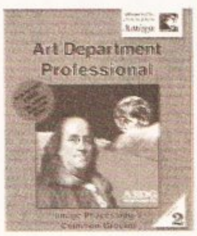
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Well, no. What we mean is that we've arranged a very special event this Spring for all Amiga owners. It's a computer show like no other, arranged exclusively for Amiga owners and inspired by the people who run Britain's favourite computer magazine.

What will be happening there? Well, first and foremost there will be stall after stall overflowing with great Amiga bargains - games, hardware, serious software, the lot. Just like in Amiga Format.

Naturally, because it's a live event that also means you can get advice and see products demonstrated by the people who make and sell them. Which makes life an awful lot easier. And that's as well as taking advantage of some very special prices.

So it's a great place to go shopping, but there's a lot more besides.

The Amiga Format team will be there along with a host of other Amiga experts, to have a chat,

What happens w
the world's top
magazine g







See the Amiga at its best!

answer your questions and help you out with any specific Amiga problems.

A special Sound and Vision area will concentrate on Amiga graphics and music, and how they can be used in making your own videos. The experts from Camcorder Plus and Future Music magazines will be able to give you the benefit of their advice.

For gamesplayers, there's the Amiga Power arcade where you can see - and play - all the latest top game releases. And you can experience Virtual Reality for yourself, too.

The place is Wembley Exhibition Centre - a prestige central London site - and the time is Friday May 7th to Sunday May 9th. Much more has yet to be revealed about what new products will be launched at the show, and other special events, so keep an eye on the news pages of your favourite Amiga magazine.

But what's certain is that it's going to be quite an event. If you've got an Amiga, you really ought to be there. Make sure to get it arranged right now, and we'll see you there!

AMIGA FORMAT Live '93

WEMBLEY EXHIBITION CENTRE
7TH - 9TH MAY 1993

hen Amiga oes live?

Tickets can be booked in advance with our

credit-card hotline 051-356 5085

which means you get in for a bargain £5.95 and you don't have to queue to get a ticket. Entrance on the day costs £7. Entrance for children under 10 is £5 (no reduction for advance booking) Opening hours are Friday 7th May and Saturday 8th May 9.30am to 5.30pm, Sunday 9th May 9.30am to 4.30pm. See you there!

Booking form

Yes please! I'd like ______ tickets (at £5.95 each)

And ______ under-10 tickets (at £5.00 each)

Total payment £ ______

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Please make all cheques payable to Future Events
Send this coupon to AMIGA FORMAT LIVE '93
PO Box 2, Ellesmere Port,
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L65 3EA.

AS

Find your local group

If your group isn't mentioned, fill in the form at the bottom of the page to let us know about you

1520 Plotter Group (ICPUG) John Bentley ☎ 06286 65932

16-32 Micro Programming AMOS, bimonthly fanzine, PD, (Fish->590) Membership 100FF or £10. Contact F Moreau, 132 rue Jean Follain, 50000 Saint-Lo, France ☎ 315220 02

Action Replay Users Club For help, tips, lists of pokes. Free. For more details contact Gordon Hagan, 66 Muirside Avenue, Kirkintilloch, Glasgow G66 3PR

Aden PD Advice and Amos for beginners, cheats. Free membership. SAE plus disk to Den Rounding, 8 Primrose Lane, Miami Beach, Trusthorpe Road, Sutton-on-Sea, Lincs LN12 2JZ

Allbit Computer Club General hints and tips, advice, competitions, draws, shop. Entrance fee £1.50. Contact Mick, 170 Claughton Ave, Crewe, Cheshire CW2 6ET

Amiga Addicts Newsletter and open nights For info SAE to A Minnock, Clonkelly, Binn, Co Offaly, Ireland

Amiga Artists Club 34 Roundhay Mount, Leeds LS8 4DW. For Amiga artists, musicians and coders. Pirates not welcome. Free. ☎ Kam on 0532 493942, 5-8pm

Amiga Athens club PD swaps, tips, cheats etc. Free membership, just new PD or tips in exchange for our services. Contact Stefanos Papamichael, 9 Derfeld Rd, Patisia, 11144 Athens, Greece. ☎ 01/2027973

AmigaBASIC club Free bi-monthly disk, help for beginners and experts. Membership £10/year. Contact: Conran Ahmad, 15 Weybridge Rd, Thornton Heath, Surrey CR7 7LN ☎ 081 689 9102

Amiga Beginners' Club 110 Whitehill Park, Limavidy, Co. Londonderry BT49 0QG. Club to help newcomers. Bi-monthly club disk, and a small PD library. Membership £2 for a single disk, or £20 for every issue

Amiga Boatowners All things nautical, WHY exchange, nautical aid programs etc. Free membership, send SAE to D. Beet for details. Lock, Branston Fen, Lincolnshire LN3 5UN

Amiga Club Newsletter, disks, PD etc.£10 membership. Send SAE for details to Imp, 190 Falloden Way, Hampstead Garden Suburb, London NW11 6SE ☎ 081 455 1626

Amiga Graphics Club I want to set one up! But to do so, I need your help, If enough of you reply, your graphics can only benefit. For details you should write to Jonathan McBrien, 16 Drumbawn, Enniskillen, Fermangh BT74 6NF

Amiga Helpline Contact Gordon Keenan, 21 Skirsa Place, Glasgow G23 5EE. Software/ hardware help service, free PD, DTP problems sorted, plus general Amiga chit-chat. Send a stamp for full details. Membership £15 per year

Amiga Mania Bi-monthly publication (28+ pages). Public domain, licenseware, bargains, classifieds, free advice, free gifts, free disks. Annual membership £12. Contact D Cryer, 88 Blackbull Rd, Folkestone, Kent CT19 5QX

Amiga Maniacs Help Graphics, sound, WB, programming, help. Beginners welcome. Free membership (by post). Contact Johnny, 8 Tan-y-Grais, Caernarfon Rd, Bangor LL57 4SD

Amiga Musicians Club Membership gets you a disk with 50 IFF samples a month for 12 months. Also sample service. Membership £30. Contact Gavin Wylie, Guthrie Street, Carnoustie, Angus

Amiga Navigation Contact Dave Thomas 4a, Allister St, Neath, W Glamorgan. PD, advice, even small repairs and social evenings. Weds 7 – 9pm. Membership £10 per year

Amiga Network International 2 monthly club disk, reviews, advice. For info contact Phil or Steve: 434 Denby Dale Rd East, Wakefield, W Yorks WF4 3AE

Amiga PD Exchange at 27 Spa Rd, Preston, Lancashire, PR1 8SL. Exchange PD, shareware, Fish and Tbag disks. £1 for disk and membership

Amiga Users Klub, Windsor House, 19 Castle St, Bodmin, Cornwall PL31 2DX. Meets every Friday from 6.30-9pm, to expand members' knowledge of Amiga and to help solve people's problems. Contact Jack Talling

Amiga Video Producers' Group Meets quarterly in Swindon. For info SAE to J Strutton, 8 Rochford Cl, Grange Park, Swindon, Wilts SN5 6AB ☎ 0793 870667

Amiga Witham Users' Group 85 Highfields Rd, Witham, Essex CM8 1LW. Tips and Basic programs. K Anderson ☎ 0376 518271

Amigaholics Club Disk magazine covers PD, programming, music, art, DTP, and more. Free membership. Contact Kevin Bryan, 49 Coutts House, Charlton, London SE7 7AS ☎ 071-580 2000 Ext 240

AmigaSoc PD, tips, cheats, MIDI, programming, disk magazine, all welcome. Free membership. Contact Neil Cartwright, 17 St Winefrides Ave, Manor Park, London E12 6HQ ☎ 018 553 5434

Amiga Users Luton We need more members. Help and advice/exchange of information, swapping PD/games, general chat. Free membership. Please phone Dave J Noble on 0582 502806

Amigos PD Large PD library – £1 for catalogue disk. For more details contact Roland Arnold, 16 Mayfair Ave, Ilford, Essex IG1 3DL ☎ 081-554 5160

AMI-INFO Interested in the serious side of the Amiga? then send and SAE to Paul Caparn, Homeside, Higher Warberry Road, Torquay, Devon TQ1 1SF.

AMOS Programmer Club Free membership, swap AMOS programs and PD, disk magazine and help for new users. Contact Gareth Downes-Powell, 6 Brassey Avenue, Broadstairs, Kent CT10 2DS

AMOS Programmers Exchange Free membership. Swapping software and ideas. Help available. J Lanng, 7 Majestic Rd, Hatch Warren, Basingstoke, Hants RG22 4XD

AMOS Programmers Group John Mullen at 62 Lonssdale St, Workington, Cumbria CA14 2YD. Hints, tips, tutorials too. SAE for info. £10 membership for bi-monthly disk mag

Angus Amiga CDTV club Contact J Robertson, 22a High St, Brechin, Angus DD9 6ER ☎ 0356 623072. Review software, discuss anything Amiga. Free membership

Artman News, views, reviews, free PD for your articles. Free membership. Send blank disk + SAE for free disk mag and 2 free games to A Greenwood, 40 Northwell Gate, Otley, West Yorks LS21 2DN ☎ 0943 466476

Asia Amiga Association Newsletter, PD, information, advice, ideas, exchanges. Membership HK$250 per annum. For more info contact Pete Alex, Room 11c, Fortune Court, 4–6 Tak Hing St, Kowloon, Hong Kong. ☎ 7245196

Astro PD Send SAE and blank disk for catalogue. Help and advice also available. Contact D Benson, 3 Skiddaw Court, Nunthorpe, Middlesbrough, Cleveland TS7 0RD

AUGFL vzw bi-monthly newsletter, PD, distribution and support of Belgian programs, registration-site, tips. 750 Bfr/year membership. Contact Lieven Lema, Meesberg 13, 3220 Holsbeek, Belgium

Avon Micro Computer Serious Club The first Sunday night of each month 1900-2200, members 50p guests £1. Centre for the deaf, 16-18 King Square, Bristol BS2 8JL Fax: 0272 311642

Basic Programmers' Group 68 Queen Elizabeth Dr, Normanton, West Yorks WF6 1JF. Encourages the use of Basic, exchanges ideas and assists beginners to the language. Free newsletter Mark Blackall ☎ 0924 892106

Beaconsfield and District CC Contact Philip Lishman ☎ 0494 782298 27 Russell Court, Chesham, Bucks. Meetings at St Michaels Hall, St Michaels Green, Beaconsfield 7.45 – 9.45pm. Programming, gaming swapping PD, having fun. Membership £10 for 6 months

Bible Bureau online scripture output and informal bible study. Quarterly meetings, membership £5 quarterly. Contact A.D., 24 Brodie House, 10 Harcourt Avenue, Wallington, Surrey SM6 8AR ☎ 081 669 7485

Bloomfield Video and Computing Beginners, video techniques. Meetings at Bloomfield Community Centre, Narberth, 7.30pm alternate Tuesdays. Membership £5. Contact Mrs Beryl Hughes, Nashville, 50 Glynderi, Carmarthen, Dyfed SA31 2EX ☎ 0267 237522

Bournemouth Amiga Club Problems, fun, social beginners welcome. Free. Contact P Chamberlain, 36 Homeoaks, 30 Wimborne Road, Bournemouth, Dorset BH2 6QA ☎ 0202 296714

BR & CJ Computer Club B Robinson at 23 Fairway Rd, Shepshed, Loughborough, Leicestershire, LE12 9DS ☎ 0392 72889 or 03922 841296. Regular disk mag packed with tips, reviews of games and serious software, game cheats database, demos and utils, very large PD library. Membership fee £1.25

Bus Stop PD from 40 to 75p per disk, cheats, classifieds and gossip, plus competition every 2 weeks. Send SAE and 50p for catalogue. Lisa Tyree, 5 Westbourne Rd, Marsh, Huddersfield HD1 4LQ

Cacophony (Unlimited) Aims to create quality PD with AMOS and others. Help given. Mark Wickson, 49 Perrott Close, North Leigh, Witney, Oxon OX8 6RU

Camberley User Group Lectures, competitions, advice, meetings, free membership. For more info contact F Wellbelove ☎ 0252 871 545

Champion PD Club PD at 30p, newsletters, advice, help and more. Membership £10. Contact Steve Pickett, 31 Somerset Close, Catterick, N Yorkshire, DL9 3HE

Cheapo PD Club Non-profit making postal PD, newsletters, advice. Membership £5. Contact Jason Meachen, Ivy Cottage, Chapel Road, Beaumont, Clacton, Essex CO16 0AR

Chester-le-Street 16-Bit Computer Club Ground floor function suite, The Civic Centre, Newcastle Rd, Chester-le-Street. Meets Mondays from 7.30-9.30pm. Exchange advice and swap tips. ☎ Peter Mears 091 385 2939

CDTV Users Club Technical support, news, compiling compatible software list. Free membership – just send SAE. Contact Julian Lavanini, 113 Fouracres Rd, Newall Green, Manchester M23 8ES

Chic Computer Club Full details with an SAE to STAMP, Chic Computer Club, PO Box 121, Gerrards Cross, Bucks. For info contact Steve Winter ☎ 0753 884473

CHUD Free membership. Send SAE for details to Mr M Sellars, 103 Newward Rd, Bulford, Salisbury, Wilts, SP4 9AH ☎ 0980 33154

Club 68000 Competitions, programming, music. Meets Harrogate Leisure Centre, Mondays 6.15pm-10pm. SAE to Chris Hughes, 59 Walton Park, Pannal, Harrogate, N Yorks, HG3 1EJ ☎ 0423 891910

Club Amiga £10 a year for PD and a 24-hr helpline (091 385 2627). For more info send SAE to Chris Longley, 5 Bowes Lea, Shiney Row, Houghton Le Spring, Tyne and Wear

Club Futura Advice to programmers and beginners. Send SAE for info to G Holland, 16 Hermiston, Monkseaton, Whitley Bay, Tyne & Wear NE25 9AN

Comp-U-Pal Australian group for users in the outback. Newsletter, helpline, PD library.

GET YOURSELF LISTED

If you run a user group which isn't listed on this page, fill in the form below for your free entry. Send it to *Amiga Shopper* User Groups List, 30 Monmouth Street, Bath BA1 2BW. We reserve the right to refuse entries.

AS24

Group name ....

Contact name ....

Contact telephone number ....

Contact address ....

....

....

Place of meetings ....

Time of meetings ....

Type of activities ....

....

Membership fee ....

Membership A$24. Comp-U-Pal, c/o MDA, PO Box 29, Knoxfield 3180, Victoria, Australia

Computeque Steve Lalley at Inskip Meeting Hall, Ashurst, Skelmersdale, Lancs on 0695 31378 7.45pm – 10.30 pm every Tuesday. From beginner to advanced user. Half year membership £2.50 children, £3 adults

Computer Club 16 Laton Rd, Hastings, East Sussex ☎ 0424 421480. A 16-bit club dedicated to being computer enthusiasts Membership costs £15 per year

Darlington Commodore Users Club News, discounts, cheap PD, advice, newsletter and more. Annual membership £5. For further info contact S Wheatley, 1 Ruby St, Darlington, County Durham DL3 0EN

Deluxe Cheats Disk User Group Steven Frew at 96 Campden Green, Solihull, West Midlands, B92 8HG. Software advice. Updates every 2 months! £4 for disk £2 for updates

Edinburgh Amiga Group Membership £5, includes free advice and PD. Contact Neil McRea, 37 Kingsknowe Road North, Edinburgh EH14 2DE with SAE

Enfield Amiga club For info contact Sean Clifton ☎ 081 8042867 32a Hoe Lane, Enfield, Middx Meet, swap, competitions, helping new users

Enterprise PD 'Free' PD if you supply disks and postage. Membership £25 per year, £5 per month. T McLoughlin, 229 Barking Road, East Ham, London E6 1LB ☎ 081 472 0434

Eureka PD Small library with friendly service. 70p per disk. Contact Liam Allen, 5 Hartwell Close, Northampton NN2 8TT

Exeter 16 Bit User Group Andrew Deeley or Phil Treby at 25A Gloucestershire Rd, Exwick, Exeter, EX4 2EF. Meeting every Wednesday 7pm. Programming £6 per annum

Free PD Club Send disk + SAE for more info to Adrian Porter, 237 Prince of Wales Rd, Manor, Sheffield S2 1FG. Free membership

Fylde Computer Club All aspects of computing. Meets 7pm, Lostock Gardens Community Centre, 2nd and 4th Wednesday of month. £15 per year, 50p on door. Contact Colin Biss, 90 The Esplanade, Fleetwood, Lancs FY7 7BQ ☎ 0253 772502

Galactik PD Swaps and sells PD. Contact E Newsome, 10 Crugan Ave, Klnmel Bay, Clwyd LL18 5DG. Demos, music, utilities, games, 99p for catalogue disk

Game Swap Club Swap original software and hardware. Membership £3. Contact Ade Ajidahun, St Andrews House, 125 North Road, St Andrews, Bristol BS6 5AH ☎ 0272 240399

Gamer-Link International pen-pal club for gamers. Free swap service, advice on tips and cheats. Life membership £5. Contact Stu, 28 Churchfield, Ware, Herts SG12 0EP.

GFA Basic Forum Contact J Findlay ☎ 0788 891197 or send SAE to 52 Church Rd, Braunston, Nr Daventry Northants NN11 7HQ. Free advice on programming in GFA. Also tutorial disk for sale. Beginners and advanced users welcome. Free membership

Gibraltar Amiga Users Club PD library, monthly newsletter, disk magazine, competitions, regular meetings (in the John Macintosh Hall). Membership from £6 per year. Contact David Winder, 7 Lime Tree Lodge, Montagu Gardens, Gibraltar ☎ 010 350 79918

Guru Masters PD demos etc, contact the Sheriff, 111 Sherbourne Rd, Banbury, Wolverhampton, WV10 9EU ☎ 0902 782277

Hampshire PD Club Mike Gallienne at 79, Carless Cl, Rownes, Gosport, Hants, PO13 9PW on 0705 585323. Public Domain Disks at 35p. Monthly competitions. SAE for more info to the above address. £10 a year

Harleys PD Swaparama Public domain swapping by mail. Contact G Varney, 140 Weston Drive, Otely, West Yorks LS21 2DJ ☎ 0943 466896

Hereford Amiga Group Membership free, help, exchange of PD and shareware. Lotus Turbo 2 Quad Player Championship. Contact John Macdonald, Alma Cottage, Allensmore, Hereford HR2 9AT ☎ 0981 21414

Hermit Computer Club Hardware help and information, program swapping. Meetings 7-10pm, Mondays. Membership £3 per term, 50p per night. Contact John Maynard, Hermit Centre, Shenfield Road, Brentwood, Essex CM15 8AG ☎ 0277 218897

Highland PD Swopping PD, advice and reviews. Send £1 for cat disk to David Paulin, 255 Drumossie Ave, Inverness, IV2 3SX ☎ 0463 242431

Hornesoft PD Over 2000 Amiga PD from 20p to 69p. Send SAE for free disk catalogue. Contact Chris Horne 23 Stanwell Cl, Wincobank, Sheffield S9 1PZ

HTS (Malta) Free membership. Contact K Cassar, Block 1 Flat, 6 H E Hal-Tmiem, Zejtun ZTN07 Malta ☎ 674023

Hyndburn Amiga Users Club Tuition, advice, PD, and more. Meets Mondays, 7pm, at the Canine Club, Accrington (£1 on the door). Contact Nigel Rigby, 7 Brecon Avenue, Oswaldtwistle, Lancashire BB5 4QS ☎ 0254 395289

In Touch Amiga Penpals, contacts, PD, swaps £2.50 per year. For more information contact P Allen, 0342 835530, PO Box 21, Lingfield, Surrey RH7 6YJ

Independent Commodore Products Users' Group Free PD software, 100 page journal, technical helplines and discounts. Contact the Membership Secretary, PO Box 1309, London N3 2UT ☎ 081 346 0050 after 6pm, or your nearest local branch:

Chelmsford ☎ D Elliott 0245 460189
Coventry ☎ W Light 0203 413511
Dublin ☎ G Reeves 010 353 1 288 3863
Macclesfield ☎ P Richardson 0298 23644
Mid Thames ☎ M Hatt 0753 645728
Solent ☎ A Dimmer 0705 254969
South Coast ☎ Brian Wise 0903 787559
South East ☎ J Bickerstaff 081 651 5436
South Wales ☎ I Kelly 0222 513815
South West ☎ P Miles 0297 60339
Stevenage ☎ B Grainger 0438 727925
Watford ☎ B Rigby 0923 264510
West Riding ☎ K Morton 0532 537318
Wigan ☎ B Caswell 0942 213402

JJC Amiga correspondence course £50 per year. Contact PO Box 19, High Wycombe, Bucks HP11 1UF. ☎ 0494 983347

Kent Youth Computer Group Contact Jim Fanning ☎ 0233 629804 North Youth Centre, Essella Rd, Ashford, Kent. Meetings at the North Youth Centre, Thursdays 7 – 10pm computer fair visits, video and DTP work, monthly newsletter Membership 40p per month

Lothian Amiga Users Group Contact Andrew Mackie ☎ 0506 630509 52 Birniehill Ave, Bathgate, W Lothian EH48 2RR Advice and help in buying hardware, software etc, group buying, dealers' circulars welcome. Membership free

Magic Windows H/W projects, programming, PD, help and advice on all topics, beginners welcome. For more info send SAE to Frame, 26 St Benets Road, Stalham, Norwich, Norfolk NR12 9DN

Maritime Amiga Club Maritime computing, interact with seafarers ashore on Amigas. Contact CDR K Osei, GN Ships Refit Office, 51 Rue de la Bretonniere, 50105 Cherbourg, France. ☎ 33 33225447

Marksman (Trojan Phazer user group) Contact David Green, 67 Thicket Drive, Maltby, Rotherham, S Yorkshire S66 7LB Promotes use of the Trojan Phazer, swaps PD and own programs, disk magazine

Masters of Raster AMOS coding, DPaint, tutorials, ray tracing, open to other suggestions. Meets Bournemouth Grammar School, Weds evenings, Sunday pm. Free membership. Contact Chris James, 10 Mavis Road, Charminster, Bournemouth, Dorset ☎ 0202 510161

Mystery Game Swapping Send a game and receive a mystery one back. Deborah Tully, 08 Lime Court, Pendleton, Salford, Gtr Manchester M6 5EG

N Ireland Amiga User Contact Stephen Hamer, 98 Crebilly Rd, Ballymena, Co Antrim BT42 4DS. Disk based mag £2.50 per issue. Free PD, SAE for further info

New Hall Amiga Users Club Games, graphics, music, Workbench programming. Meets 7pm every Tuesday, New Hall Social Club, 104 Bury Rd, Dawtenstall. Membership £5 per year, under 16s not allowed. Contact Bill Grundy, 115 Stanley St, Accrington, Lancashire ☎ 0254 385365

Numero Uno PD, swapping, competitions, pen pals. £3.50/year. Contact Dillon Eyre, 21 Burstall Hill, Bridlington, N Humberside YO16 5NP

Pascal Programmers Group Disk-based newsletter for HighSpeed Pascal users. Free membership. Contact Colin Yarnall, 93 Manchester Rd, Wilmslow, Cheshire SK9 2JQ

Pennine Amiga Club 26 Spencer Street, Keighley, West Yorkshire BD21 2BU. Free membership, free advice and a newsletter. Contact Neville Armstrong for more info ☎ 0535 609263

Perth and District Amateur Computer Society For further information contact Alastair MacPherson 137 Glasgow Rd, Perth. Meetings third Tuesday in every month, 8pm. General advice, talks, Amiga PD. Membership £6 or free for under 16s

Pete's PD PD from only £1 per disk. Send 50p for disk catalogue to Peter Garrett, Chestnut Cottage, White Lion Road, Amersham, Bucks HP7 9JR

Phoenix Demo Coders, musicians, artists and designers making the best demos. Free membership. Contact Frank, 46 Hall Road, Chadwell Heath, Romford, Essex, RM6 4LJ ☎ 081 597 4661

Public Domain Exchange Demos, music, utilities, animation. Annual fee £8 Contact D McLeish, 26 Taunton Ave, Leigh, Lancs WN7 5PT

Public Domain User Group Swaps PD, provides advice. SAE to 12 Oxford Rd, Guildford, Surrey

PUG Contact S Jackson ☎ 0446 772331 Whitebeam Cottage, Trerhyngyll, Cowbridge, S Glamorgan Cheap PD library, swap hints, reviews, articles etc. Send an SAE for further details

Quality Amiga PD Only £1.20 per disk. Send SAE for free catalogue to John MacLeod, 4 Worcester Avenue, Grimsby, South Humberside DN34 5EY

Redburn Computer User Group Contact Paul Armstrong ☎ 0294 56003, 12 Highfield St, Kilwinning, Ayrshire KA13 7BN. Meetings at the Redburn Community Centre, Dickson Drive, Irvine. Group meets every second Wednesday from 5 Aug 92, 6.45 – 9.30pm. Help, ideas, PD and shareware, graphics and business. Membership 75p per meeting; £7 per year

Rye Computer Club Swap/meet at the Rye Community Centre. For info contact Oliver Campion, 71 The Mint, Rye, E Sussex TN31 7DP ☎ 0797 222876

Shieldsoft PD at Wilmar Lodge, 13 Churton Rd, Rhyl, CLwyd.LL18 3NB. Write for more information. Basic programming help. Advice on the CLI and AMOS. Disks from only 50p to 80p. Membership free ☎ 0745 343044

Sherlock PD Quarterly disk mag, help and advice for beginners. 50p per disk. A Doyle, 44 Milton Street, Warrenpoint, Co Down, N Ireland

Shropshire Amiga Link Advice, monthly disk mag, PD. Free membership. Contact N Cockayne, 2 Dodmoor Grange, Randlay, Telford, Shropshire TF3 2AW ☎ 0952 591376

Sittingbourne Co-op Demos, tutorials, lectures. £5/year. Meetings Mondays 6-9pm at Mall beneath Regis Suite. Contact Andy, Unit 2, The Mall, 121-127 East Street, Sittingbourne, Kent ME10 4AQ ☎ 0795 842608

Slim Agnus 115 Brocks Drive, North Cheam, Sutton, Surrey SM3 9UW. Group meets the last Thursday of every month. PD library, BBS, advice from Amiga experts. Contact Philip Worrel.

Software City Swapping, competitions, club magazine. Membership £8. Contact N Richards, 9 Hollis Close, Manor Estate Farm, Rawmarsh, Rotherham, S Yorks S62 7LX or ☎ 0709 526092

Software Exchange Club Free help and advice. Contact Michael Lacey, Fern's Post Office, Enniscorthy, County Wexford, Republic of Ireland

Software Exchange Service 13 Bournville Lane, Stirchley, Birmingham, West Midlands B30 2JY. For more info ☎ Michael Pun 021-459 7576

South 16 Amiga/ST User Group Bi-monthly disk based mag, discounts available from local stores, free advice and extensive PD library. £12/year. For more info send SAE to PO Box 16, Southampton, SO9 7AU

Southend Team Music, PD. Free membership. Contact Scotty, 52 Prince Avenue, Southend-on-Sea, Essex SS2 6NN ☎ 0702 333974

Southport Amiga Users Advice, friendly evenings Mondays at 8pm. No charge, discounts from local store. For info contact Michael Mitcham, 5 Easdale Drive, Ainsdale, Southport, Merseyside ☎ 0704 79936

South Wales Club Newsletter, PD library, free newsletter, programs, help and advice. For more info contact D Allen 53 West Avenue, Trecenydd, Caerphilly CF8 2SF

Steel PD, cheats, ideas, music, art, programming, hardware mods. Free membership (postal only). Contact James Whitehead, 33 Middle Cliffe, Drive Crowedge, Sheffield S30 5HB

The Amiga Studio Friendly, helpful advice for serious users of the Amiga. Monthly newsletter, PD library, free loan of equipment to members, bar. Meets 7pm Thursdays, Mitchells Club, Scotia Road, Tunstall. Contact Dave Rose ☎ 0782 815589

Twilight Advice on hardware and software,Fred Fish PD. Free membership, disks 50p each. Contact 13 Mavis Court, Ravens Close, London NW9 5BH

UK Subs The Hanger BBS, trading post for PD files, swapping. Free membership. Contact Diddy / Arklight ☎ 0525 875518

Unique Styles Derek at 15 Montgomery Rd, Highbrooms, Tunbridge Wells, Kent ☎ 0892 518319. By post only. For Amiga artists, programmers/musicians. Free membership

Video Editing Club Invites DTV users for titling and editing. Quarterly magazine, send SAE for details to Danny Fisher,3A Thornbridge Road, Iver Heath, Bucks SL0 0PU

Video Visuals Exclusively for video producers, PD library, genlocking, digitising, quarterly disk magazine. Membership £10 per year. Contact Chris Brown, 4 Lavender Close, Witham, Essex CM8 2YG

Wardray Hern Consortium User group for Amiga and possibly others. Membership fees to be discussed and incurred. PD library to be set up. Also Hern connection – worldwide contacts wanted. SAE and disk to WardCon info, (AS) Warren Hardy, 21 Stockfield Ave, Fenham, Newcastle upon Tyne NE5 2DX

Warpdrive Help-line, PD library, bi-monthly disk mag, free drinks, competitions and infosheet. £15 per year. Contact B Scales 110 Burton Ave, Balby, Doncaster DN4 8BB ☎ 0302 859715

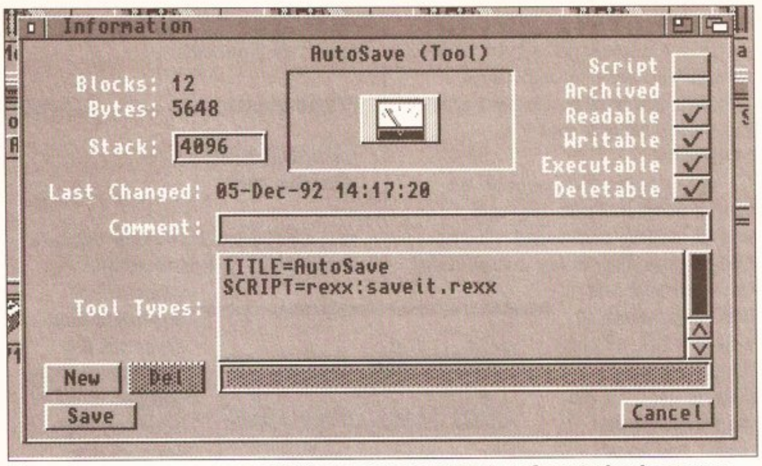
WCSPSA! Help available. PD disk of your choice and newsletter every month. PD at £1. Membership £25. For further info contact A Jamieson ☎ 0749 677609

Willow PD Free advice, disks only 90p each. Free membership. Contact Willow PD, 2 Longbridge Close, Sherfield-on-Loddon, Basingstoke, Hants RG27 0DQ ☎ 0256 882654

Worldwide PD Over 2,300 disks held, telephone for free cat disk now, BFG personnel only. Contact Dave White, Berliner Str 39, 4030 Ratingen 1, Germany ☎ 02102 499729

Wrexham District Computer Club PD, library, equipment loan. 10p to join, 50p to get in. Meetings at the Memorial Hall, Wrexham every Thursday, 7-10pm. Contact Paul Evans, 3 Ffordd Elfed, Rhosnesi, Wrexham, Clwyd LL12 7LU

Zymurgy General Amiga computing. Free membership. For further info contact A Carr, 39 Sewlkirk Rd, Ipswich, Suffolk IP4 3JB ☎ 0473 725241



If you know your way around ARexx, you can use *AutoSave* to back up your work (or do anything else) at regular intervals – thanks to Fish disk 771

Software for free

In this month's round-up of budget-priced programs, Ian Wrigley tests fifteen of the best new disks around. Plus the latest PD news: could this really be the end of the line for Fred Fish?

As regular readers will know, I frequently look at the latest disks from Fred Fish – a man who has made it his mission to collate Amiga PD and shareware, and distribute it around the world. Indeed, this month we have disks 771 to 790 under scrutiny – supplied by those nice people at Anglia PD. Unfortunately, however, it seems uncertain how long the Fred Fish collection will continue in its present form. Reproduced here is a message which Fred himself has E-mailed around the world:

"Over the last couple of years, I've noticed a trend where fewer and fewer people are on my direct subscriber list. This last year has seen a particularly sharp decrease, from about an average of 75 subscribers to the current low of 41. That's right, there are only 41 people or organisations in the whole world that receive disks directly from me as of January 17, 1993, with about half of them being outside the USA.

"During this last year, the amount of time I have had available to spend constructing disks, doing accounting, and otherwise managing the library has also dropped sharply, so that more than ever I depend upon using outside help for things like sorting the submitted material, creating prototype disks which I then use for constructing the final disks, and doing the actual duplication, packaging, and shipping of the disks. I cannot expect these people to work for nothing, so I have been paying them reasonable compensation for their time out of the ever-dwindling subscription income.

"It has reached the point where sometime in the next month or two I will make a decision about whether or not to shut down the library, since if there are insufficient incoming funds to meet the operating costs as well as pay for an occasional perk like a trip to an Amiga show once or twice a year, or some new hardware toy, there is little incentive to continue spending 20-30 hours a month running it.

"If you are in a position to influence a club, computer store, or other Amiga-related organisation to maintain a direct subscription for new disks, and thus help fund continued maintenance of the library, and are interested in seeing the library continue to grow, I'd urge you to consider doing what you can to help push the number of direct

> **"It seems uncertain how long the Fred Fish collection will continue..."**

RATING THE PROGRAMS

Just to be awkward, I rate the software that I review in two different ways, depending on what it is. Disk magazines, collections of clip art and the like are given a 'value for money' rating, since you're essentially paying for one thing, or group of things, on the disk.

Single programs which appear in a collection of others, or programs which I've downloaded from bulletin boards, are given a 'program rating', which reflects how good I think they are, taking into account usability, bug-proofness, my own particular (or should that be peculiar?) tastes and so on. Both ratings are out of a maximum possible 10.

BEGINNERS — BEGINNERS START HERE — BEGINNERS

What is PD?

PD is a general term which many people incorrectly use to refer to all freely-distributable software. In fact, PD (which stands for Public Domain) software is only one branch of this area; the other main one is shareware.

Essentially, PD software may be copied and used by anyone, although some authors place restrictions such as not allowing a PD library to charge more than a certain amount for the disk.

Shareware, on the other hand, should be treated more like commercial software. Although you are allowed to copy and pass around shareware programs, if you like one then you should pay the requested fee to the author – it's normally around £15 or less, and often entitles you to an upgraded version or a printed manual. Paying your shareware fees encourages software authors to write more programs – and if they don't, the Amiga scene will be a poorer place. Don't think that you're paying money for nothing, either – often hundreds or even thousands of hours of work have gone into creating a program, and it's only right that the programmer receives some reward for his or her work.

The third branch of software that we cover here is called licenseware. This is a form of shareware which is licensed to one (or more) PD libraries. In essence, when you buy a licenseware program you are buying shareware and paying the license fee at the same time. For this reason, you should treat any licenseware that you buy exactly as you would treat a piece of full-price commercial software – don't pass it around to your friends. You've only bought the right to use it yourself.

Can I pass other people copies?

Yes – that's the way that PD reaches a wider audience. Just make sure that you have followed the author's requirements for distribution. These are normally things like not charging more than a certain amount for the disk, or that you make sure that all the original documentation is included on the disk.

You can also pass on shareware – but not any registered copies of programs. If, when you pay your shareware fee, the author sends you an improved version of the program, then be careful not to give that out. Only pass on unregistered shareware.

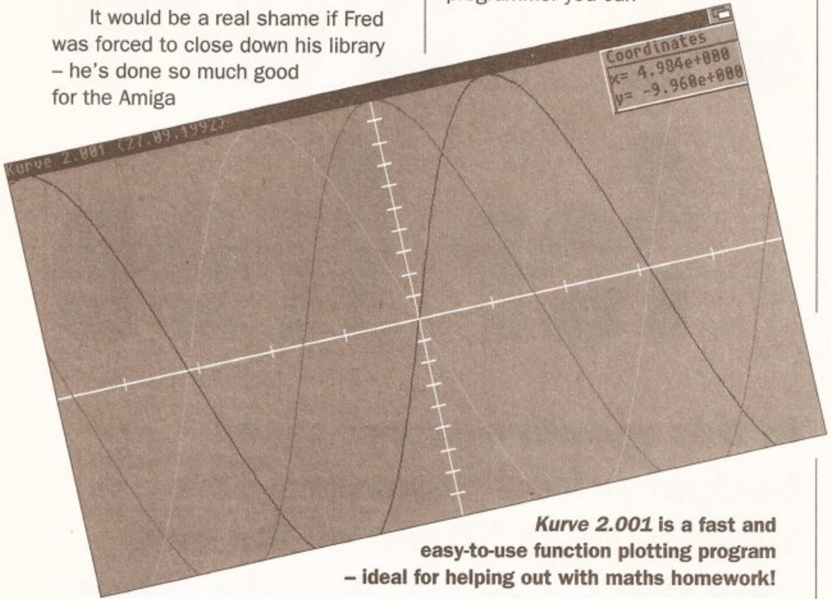
You should not, of course, pass on licenseware – it should be treated in the same way as registered shareware.

subscribers back up to more reasonable levels. Thanks.

"Fred Fish, 1835 E Belmont Drive, Tempe, AZ 85284, USA. Phone 602-491-0048."

It would be a real shame if Fred was forced to close down his library – he's done so much good for the Amiga community in terms of making sure that shareware and PD is widely distributed. If you're a member of a user group – or even a PD library – I urge you to think about whether your organisation could subscribe, rather than getting disks second-hand. That way you'll get all the latest PD as soon as it appears – and you'll help make sure that the Fred Fish library lives on.

Well, it's in your hands. In the meantime, let's take a look at just fifteen good reasons why Fred Fish should continue...



***Kurve 2.001* is a fast and easy-to-use function plotting program – ideal for helping out with maths homework!**

AUTOSAVE
Fish disk 771

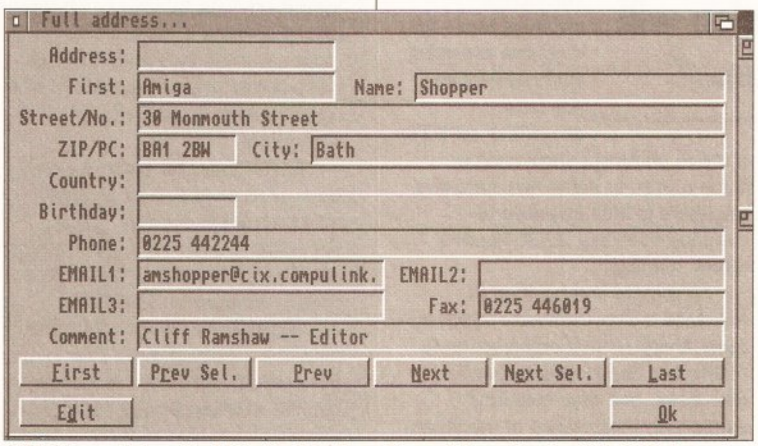
This is a simple little program which has one task in life – to call an ARexx script at regular intervals. The author, Michael Warner, wrote it to implement an auto-save feature, although it could be used for whatever you want. Basically, to use it you must write your ARexx script (what do you mean, you can't program in ARexx – haven't you been following our tutorial series?), and use the icon tooltypes to specify where your script is saved. You can set it to execute the script every 1, 5, 15 or 60 minutes – a window allows you to switch between these at any time as the program sits in the background.

> "You can set it to execute the script every 1, 5, 15 or 60 minutes"

Finally, the source code – in C – is included, so if you're a budding programmer you can reverse-engineer this to see how Michael has written *AutoSave* to use and interrupt the timer device.

To sum up: if you can program in ARexx, and you have an ARexx-compatible program, *AutoSave* is a neat and efficient way of getting that program to automatically save your work for you.

Program rating 8/10



***DFAddress* claims that it's "not just another address book utility". But apart from a couple of interesting features, that's all it looks like to me**

KURVE 2.001
Fish disk 778

Kurve is a function plotting tool written by Henning Rink – German authors seem to abound this month. It's fast, and easy to use – but it's also rather powerful. Just give the program a mathematical function, and it will plot the graph for you. But that's not all it does – it will also, on request, plot the first and second differentials of the function, and will numerically integrate the function to provide a reasonable estimation of the area under the curve. It doesn't even seem to have problems when you give it unpleasant curves to deal with – if the area comes out as 'infinity', the program doesn't crash, but merely reports that it's '+++++++'.

Other data which you can get from a curve includes any zero points, turning points and maxima and minima. For further customising, the maximum and minimum values of x can be set, as can things like the colours used for the graph, the screen mode, and so on.

> "ideal for anyone who needs to plot mathematical curves..."

The program will only accept one variable – x – but it has a reasonable range of built-in mathematical functions which can be accessed, including the standard trigonometric ones like sin, cos, tan, and their inverses, plus sinh, cosh and tanh, exp, sqr, and more.

All in all, this will be a great program for any maths students who want to check their results, and is ideal for anyone who needs to plot mathematical curves but who doesn't have the time or patience (or, like me, the ability to draw a smooth curve or use one of those bendy ruler things properly!). My only criticism is that in the English documentation, Henning says that "because *Kurve* is so easy and intuitive to handle, I wrote only a short documentation. If you want more info about the program refer to the [German documentation], which includes a complete description of all program features."

Fine, but if you don't read German you may find yourself puzzling over some aspects. Still, despite that this program is one which will soon become popular with any Amiga-using scientists and mathematicians out there. Its speed alone sets it streets ahead of the competition. And if you send the author DM20, he'll send you an even faster version for machines with a maths co-processor.

Program rating 9/10

DFADDRESS
Fish disk 781

Yes, *DFAddress* is another address book utility – even though the introductory documentation says that it's "NOT just another address utility." However, the program does have a couple of interesting features which may make it worth a look if you're still searching for the perfect 'little black book' program.

First, the program is actually a commodity, so it can run in the background and be invoked by a hot-key. Second, it can display an address in two different ways; one contains just the name, town, phone and E-mail addresses of a record, the other shows the full details. This is probably reasonable in that often you only want a person's phone number, but displaying three E-mail addresses and not the fax number? I suspect that the author, Dirk Federlein, lives in a far more electronic world than most of the rest of us!

Creating new records is easy, although the format is a little odd: there's a field called 'address' which seems to have no use, only one line for the street address (so things like 'Unit 11/Gibbon Business Estate' are tricky to enter) and the postcode comes before the city name. There's a field for the person's birthday, but only one line for comments. And so on – not at all flexible enough, really.

The program does have a couple of interesting – although not particularly useful – options, such as the ability to dial the phone number via a modem connected to the Amiga's serial port (does anyone actually use this facility in address books?), and the option to auto-enter data into any of the fields (so if, for instance, almost all your contacts lived in Aberdeen you could have that automatically entered, and then edit it only when necessary).

The search features are probably some of the most sophisticated I've come across – you can exclude as well as include specified patterns, for instance – but to be honest, all you're ever likely to want to do is find a person's record quickly – not do convoluted, Unix-style searches of your address database.

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CUT, TICK & POST.....CUT, TICK & POST

Telephone or Fax Hotline (0702) 466933

PD Soft (AS24) 1 Bryant Ave, Southend-on-Sea, ESSEX, SS1 2YD

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❑X V776 AMOS LESSON 1 The best Amos Tutorial program. (APD151)
❑X V792 KIDS GAMES Includes Geography, Math, Science and Word Games. Also contains Wheel of fortune.
❑X V793 AMIGA BEGINNER You asked for it! A tutorial for the beginner on using your Amiga! Covers CLI & WB.
❑X V824 ELEMENT v3.0 Nice interactive display of the Periodic Table of Elements.
❑X V825 WORLD DATA BANK v2.2 Using a database of coordinates of the C.I.A's it plot's world map's in cylindrical or spherical projects, various degrees of magnification.
❑X V843 DESERT STORM You can select Map's, and all information surrounding the Desert Storm Attack.
❑X V849 LANGUAGE TUTOR v1.0 Spanish, French, German & Italian.
❑X V881 SECOND WORLD WAR Excellent information production.
❑X V908 DELUXE PAINT TUTOR Do you had DPaint, Then learn to use it.
❑X V927 CLI TUTOR Helpful program to understand how to use CLI/Shell.
❑X V933 GCSE MATHS Maths prog to help with the GESE maths course.
❑X V940 MATHSADV Simple math problems to solve. REFLEXTEST Tests addition, subtraction & multiplication.
❑X V941 AMIGA FIRST START Help on any subject you want.+ Easy Start.
❑X V944 AMIGAWORLD A data base that contains information about every country on Earth. Compare countries
❑X LP29 BIG TOP FUN 4 progs to help children with words & pictures. £4.99
❑X LP37 ROCKET MATHS Times Tables, Takeaway, Add up & Divide. £4.99
❑X LP45 MUSIC BOX Written for ages 7+. Explains notes etc. Also contains some very well known tunes. £4.99
❑X LP51 MAGIC YOUNG ARTIST A nice colouring book program for younger Amiga Users. Apx 30 Pictures.
❑X LP59 PREHISTORIC FUN Who likes Dinosaurs? Everyone, Four great games based round Dinosaurs £4.99
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VIDEO PRODUCTION

❑X V48 TV & VIDEO Contains background screens for your video productions. Many types of graphic styles. Peel, Takes an IFF Pic & peels it down the screen. (8)
❑X V86 VIDEO PRODUCTION 1-2 (2) Packed with video & Genlock utilities.
❑X V415 VIDEO SCREENS : 1 Back ground pictures for video production
❑X V517 VIDEO DB Program for keeping track on your video tape collection.
❑X V518 IMAGE LAB This program is like a mini Art DEPT. Tools On Tap Does fades, colourbars & gray bar.
❑X V519 VIDEO: STILLSTORE Used to create over the shoulder graphics
❑X V687 VIDEO WIPES A collection of IFF Brushs & background graphic effects.
❑X V693 HARLEQUIN VIDEO ART & FONT DISKS A video production with excellent backgrounds & fonts (8)
❑X V818 INSCRIPT v1.1 Produce video titles. Includes fully editable text entry, IFF Pics as back grounds all resolutions.
❑X V829 VIDEO PRODUCTION 3-4 This is the latest collection of the New video related utilities. Excellent (2)
❑X V864 GENERATED ART Excellent collection of back ground pictures.
❑X V874 VIDEO TITLER PRODUCTION Utilities for generating video Titles.
❑X L27 VIDEO TEXTURES Like Black Marble, BrickWork, Roughice, Marble, Tiles, Water ripples & Wood. £3.50
❑X FFP10 FLETCHER FONTS A three disk pack of 50 - 100 point 16 colour Video Fonts. Includes templates £9 *

VARIOUS UTILITIES

❑X V16 THE AQUARIUM Turns your screen into an eyecatching Fish tank.
❑X V109 PRINT STUDIO Excellent for printing graphic pictures or just text.
❑ V191 MASTER VIRUS KILLER Virus Checker & Killer. With Excellent options.
❑ V215 DISKMASTER v3.2 Copies files from one disk to another.
❑X V262 DUPLICATION & BACKUP Super Duper,Turbo copy, Sanity copy & PCopy. Four new disk copiers.
❑X V277 FORTRAN-77 V1.3c Compiler, linker & run time support libs.
❑X V279 CROSSWORD CREATOR Creates crosswords. UPDATED VERSION.
❑X V284 MCAD PROGRAM The Object Drawing Program. ie C.A.D.
❑X V298 NORTHC v1.3 The Complete C language with all files needed (2)
❑X V301 EYE OF THE BEHOLDER The Book with Maps, Strategy & Solution.
❑X V323 ANALTICALC SPREAD SHEET The best spread sheet. (2)
❑X V332 AMIGA PUNT PROGRAM Predict which horse will win the race
❑X V339 SPECTRUM EMULATOR Data Disk 1: The Adventure Classics
❑X V350 BUSINESS CARD MAKER Design your own Business cards.
❑X V366 600 BUSINESS LETTERS Over 600 Standard Business letters
❑X V390 DESK TOP PUBLISHING Extra features,Text & Graphics Editors
❑X V392 AMICASH BANKIN The best bankin program that I have ever used
❑X V394 CHEMESTRICS v2.14 Program that draws molecules using the calotte model. Updated this Month
❑X V401 WINDOWBENCH v1.0 (2) An excellent Workbench 2 replacement / Upgrade for all WB v1.3 users.
❑X V413 WORKSTATION Not just another WB clone. It's a collection of utilities with the Workbench theme. (2)
❑X V420 CURSOR BASIC COMPILER Compile any Amiga Basic program
❑X V425 ANTI-FLICKER Said to stop the flicker in High Res mode during some Amiga program operations.
❑X V431 IMPLODER v4.0 Reduces file size for storage on hard drives.
❑X V433 ANIMATION STUDIO Make your own little animations.
❑X V444 PRINTER DRIVER DISK III Now contains instructions on how to install them. includes over 90
❑X V479 CHESS & CHESS UTILITIES A collection of chess related Puzzles.
❑ V484 ADVENTURE SOLUTIONS (2) Solutions for various games.
❑X V489 AMIBASE PROFESSIONAL v2.0 Latest version of the excellent Database program. NEW FEATURES
❑X V490 MESSY SID v2.0 Will read MS-Dos disks, Transfer any text files to and from the PC. So you can do work on an IBM or an Amiga & swap text.
❑X V521 PLOTTING & GRAPHICS PLOTXY, A powerful full featured plotting prog. PLANS A computer aided drafting prog. Requires ARP
❑X V522 ARP V1.3 : Conman v1.3c Makes many improvements to Dos. Includes full developers guide.
❑X V523 DICE C COMPILER (2) Matthew Dillons full featured powerful C compiler & environment system.
❑X V536 CATALOGUE UTILITIES A collection of utilities used to Catalog disk/ Video & Tape collections (2)
❑X V567 PRINTER DRIVER GENERATOR A selection of utilities with various excellent Printer Driver Generators.
❑X V569 DUNGEON MASTER MAPPER v1.1 You can design maps, for dungeons & Towns for use within any Advanced Dungeons & Dragons
❑X V573 FILE & HD HDClick v2.0, Selector to make HD Menus with gad gets. File Minder, For maintaining files & Directories. DosControl, Contains functions of many separate tools. (2)
❑X V575 HOME BUSINESS PACK Excellent selection of utilities based on word processing, Data Manag-ement, Spread Sheets, Accounts & Printing. (6)
❑X V583 ICONEDITOR III v2.0, Can create Icons upto 640x200 pixels. Icons, Edit & Create any Amiga icon.
❑X V587 GELIGNITE FONTS A selection of fonts for use with any DTP Package or Dpaint disks.
❑X V607 PRO TRACKER v2.2 Written by Lars Zap Hamre. Another update to the Ultimate sound making program.
❑X V610 GOLF SCORES v1.4 It will record each round you play, Save it, make up an eclectic score NEW!
❑X V611 FOOTBALL LEAGUE EDITOR v1.1 Want to update your teams league position as the results come in. Not A600
❑X V620 ASPICE v3.2 Circuit Analysis A full featured program for electric circuit
❑X V621 EDWORD v2.2 is a fully featured & operational Word processor
❑X V624 NIB COPIER v2.0 Will copy in AmigaDos, Index Nibble modes, search mode & special parameter copy.
❑X V627 PRINT FONTS No's 1-3 (3) The latest selection Fonts for use with any IFF Painting / DTP Program.
❑X V635 IBeM EMULATOR v1.05 Is a CGA Colour IBM-PC Emulator written to run on any Amiga. Shareware version
❑X V647 HACKS A selection of WB Hacks that have been reviewed in CU
❑ V648 TITANICS CRUNCHER v1.0 Cruncher with help & various protect modes includes speed changes.
❑X V659 COMPUTER DIAGNOSTICS v9.1 Is there a problem with your computer! Then what is it.
❑X V660 HOME MANAGER This is a great all in one address book with an inventory database & To-do list
❑X V661 VERTEX Allows you to create 3d objects with-out using the X, Y & Z views. Loads Sculpt 3d/4d & Turbo Silver.
❑X V662 DCOPY v3.0 PRO You can select the speed of the disk drive, Copy modes, Dos, Nibcopy, Ver & safecopy
❑X V666 MODELLING OBJECTS (2) Contains over 20 vector objects in Imagine format. Perfect with Disk V661
❑X V678 DRAW MAP v4.1 (2) You can generate world maps in detail. 2Mb. ❑X V681 1.2Mb or ❑X 1Mb
❑X V681 GAME TAMER v2.2 Get a hold of that extra hard game & Cheat.
❑X V683 SUPER LOCK v1.01 Seal your disks / Hard drives for your eye's only. Protects with a Password.
❑X V684 FONT CHARACTER EDITOR v1.0, Also contains other utilities.
❑X V685 ASTRO PRO ASTROLOGY Best Astrology prog on the Amiga by far.
❑X V686 MULTITOOLS v1.12 After this program has been installed your Amiga drives can then read 720k IBM Disks.
❑X V688 MAGNETIC PAGES v1.30 Creates disk based magazines with graphics.
❑@V690 WB v2.04 UTILITIES (2) This set contains the programs that should have been with WB 2.04+. They take full advantage of the many NEW capabilities that are available.
❑X V692 RACE RATER v1.6 Program for people who want info about horse races.
❑X V696 POST v1.7 PostScript interpreter which implements the Adobe language. ARP
❑X V698 AGRAPH v2.0 Brings the world a chart drawing package. Pie chart production/ presentation program.
❑X V700 PERM CHECK Designed to take chore out of checking plans for winning lines
❑X V701 STRATA v1.0 Is a landscape generating prog. Allows printing from any angle, position or magnification.
❑X V702 EASY RAMOS FOR EASY AMOS Update for Easy Amos user's.
❑X V703 AMOS UPDATER DISK v1.34 A major update to the software. Directly update AMOS installed on a hard disc.
❑X V704 AMOS COMPILER v1.34 Second AMOS Compiler Update.
❑X V705 MED v3.21 Excellent update to the famous music program Med.
❑X V710 AREXX TUTORIAL Includes several sample Arexx scripts & sample progs. Arexx comes free on all WB v2.04+ disks
❑X V711 UNIX Contains a working demo of Minix, A Unix workalike. Minix is system call compatible.
❑X V712 PROTEUS BBS Start your own BBS. Requires a modem.
❑@ V713 COMUGRAPHIC FONTS Will work with DPaint v4.1, ProPage, Page Stream, Pagesetter & Workbench v2.04+.
❑X V715 THE COMPLETE BIBLE With the entire text of the New Testament & Torah (Old Testament). 1Mb (3)
❑X V718 SPECTRUM EMULATOR v1.4 Which is NOW!! 3 times faster. Requires a spectrum computer once.
❑X V719 FREECOPY v1.8 Removes protected games copy protection so that the user can install them on HD.
❑X V720 DISKPRINT v3.51 A data base which prints & stores disk labels.
❑X V723 BOOT INTRO CONSTRUCT ION SET Create excellent Boot intros.
❑X V724 PRINTER DRIVERS v4 This is an updated Drivers disk : Canon LP8, Canon Bubble jet's & Star 9 pin.
❑X V725 THE SUPER KILLERS v2.6: BOOT X v4.50 This is the best virus killer disk to date, kills over 262 virus & may be more. Includes many others
❑X V727 ART OF MED 2 A another excellent selection of Med tunes.
❑X V730 ICON MANIA An excellent selection of Icon clip Art for your WB Disk.
❑X V731 AMOSBROT v1.1a More fractal types which include Logistic Equation, Coast lines & trees
❑@ V732 WB v2.04+ UTILITIES FPic, DCopy, Boot Menu, Scenery, Huge, Showmanager Excellent (2)
❑X V733 SOFTWARE LISTER v1.6 This program is designed to keep a track of your Software collection.
❑X V742 ONLINE v1.4 Program will allow you to find cheats within games.
❑@ V743 TERM v2.3 Best Communication program for use with WB v2.04+ (2)
❑X V745 TEXT ENGINE v3.4 MANUAL v3.0 This is the largest collection of documents, examples & utilities in C for the Amiga. It consists of six manuals, with more than 40 chapters, 175 fully excutable examples compilable with source codes. (5)
❑X V757 AMIGADEX v1.61 Creates / converts your Amiga into a card Database system. Very well done.
❑X V758 TEXTPLUS v4.0e Another update of this excellent Word processing program. Requires Hard drive
❑X V759 TEXT ENGINE v3.4 Updated version of the Word processor with AZSPELL. Excellent spell checker
❑X V761 A-GENE v4.18 The latest version of the popular genealogy database program. By Mike Simpson
❑X V762 BBASE v5.5 Database with loads of features and it's easy to use.
❑X V770 ACCOUNT MASTER v2.0 Excellent Amos written Account program
❑@ V773 WB v2.04 WINDOWBENCH v2.0 Excellent Workbench replacement for all WB v2.04+ Users (2)
❑X V777 VOICE CLI v5.2 The idea is to control the CLI/Shell with your own voice.
❑X V778 RAYSHADE v4.0 Complex Ray tracing package. 2Mb (3)
❑X V782 FORMS Create, Edit, Draw, Colour & print your own forms
❑X V783 PROGRAMMING TOOLBOX Many programs to help in your development of Arexx most ! but some in basic.
❑X V784 AREXX (2) Two disks which contain Arexx programs & examples
❑X V786 PASCAL This disk contains everything needed to program in Pascal. Includes a68k 68000 assembler & more.
❑X V787 PROGRAMMER TOOLS GadTools to design your user interface to your own programs using all of Amiga DOS 2.0+'s new features. Also RegTools.
❑X V790 ANIMATION UTLS Includes CyroUtils for splitting, combining, and creating animations from IFF picture files.
❑X V791 DIRECTORY ULTS Includes the most powerful and highly recommended programs which are designed to make CLI & Shell tasks virtually obsolete.
❑X V794 GRINDER A complete graphic conversion package that supports GIF, JPeg, Atari St (Neochrome / Degas), PCX, Targa, TIFF, Ham-E and IFF Format pics
❑X V797 EASY AMOS PROGS (2) Contain source code for use with Easy Amos.
❑X V799 ADVENCED UTILS SerNet & ParNet, Connect 2 Amiga & share resources via the serial / Parallel ports. Mymenu Puts menus on your Workbench screen.
❑X V800 ARCHIVERS II This disk is packed with the latest Archivers to date.
❑X V801 100 PRO PAGE FONTS Theses fonts are for use with Pro Page & have be checked with the font con-verts program which comes with Pro Page3
❑@ V806 WB v2.04 UTILITIES (2) This is the second double disk collection of WB v2.04+ utilities that take advantage of the NEW machines capabilities.
❑X V809 MEGA CHEATS v2.1 This disk contains the very latest cheats.
❑X V811 ELECTROCAD v1.2 & PROTOPER Another Updated on the Cad / Electronics drawing Programs.
❑X V812 CANON This disk contains Printer Drivers & Canon Studio, Gives better print output for Canon Printers
❑X V814 PC TASK v1.1 is a software IBM-PC Emulator. Allows you to run the majority of IBM software with NO additional hardware. CGA Colour NEW UPDATE
❑X V815 FILE & HD MANAGEMENT 2 : DirWork v1.62 File copier. MegaD Another NEW Update on an excellent File copier like the NEW Disk Master Pro II is it's Operations. Also contains a couple of other programs to help out (2)
❑ V817 A500 PLUS EMULATOR As it sounds will let v1.3 / v1.2 owners run WB v2.04+ software with out any need to purchase to WB v2.0+ chips.
❑@ V819 ICONAUTHOR v1.06 Replacement for IconEdit2.0. It can transform IFF or Icon files that match the WB v2.04+ colours.
❑X V820 BBBBS v5.7 Baud Bandit bulletin Board System Futures include up to 99 file libraries, interface to extra devices
❑X V821 SNOOPDOS v1.5 Monitors AmigaDos calls & allows you to see what library, devices, fonts are requested.
❑@ V822 ABACKUP v3.77 A hard drive backup program that features, multi-drive support, full backup, compression.
❑X V823 POWERPLAYER v3.4 Very powerful, user / system friendly module player. It can handle nearly all module formats can read PP modules & comes with it's own cruncher.
❑X V826 AHDM v3.4 Hard Drive Menu. When placed in your startup-sequence, offers a 16 page menu, each page having upto 10 possible actions.
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❑X 2054 ATIC ATAC A rendition of the game from the original Spectrum
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❑X 2411 TOTAL WAR The board game RISK as reviewed in AF.
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❑X 2482 DESCENDER Is a clone of the classic arcade game Tempest complete with vectorized graphics.
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❑X 2617 GOLDEN OLDIES 2 : Crook, Excellent 1 or 2 player version of Frogger. MouthMan, version of packMan. BI-Planes, This is the most additive games we have played here 2 player only. Trail-Blazer, CMB 64 Classic Scamble.
❑X 2620 DR.MARIO A Strange Tetris like game where you move coloured pills down the screen. 3 in a row go's
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❑X 2622 DONKEY KONG Original platform game in which you must rescue the girl. + Mad Bomber.
❑X 2674 INTERPID In the Artic ice you control a tank on a mission to rescue hostages in this superb Amiga original
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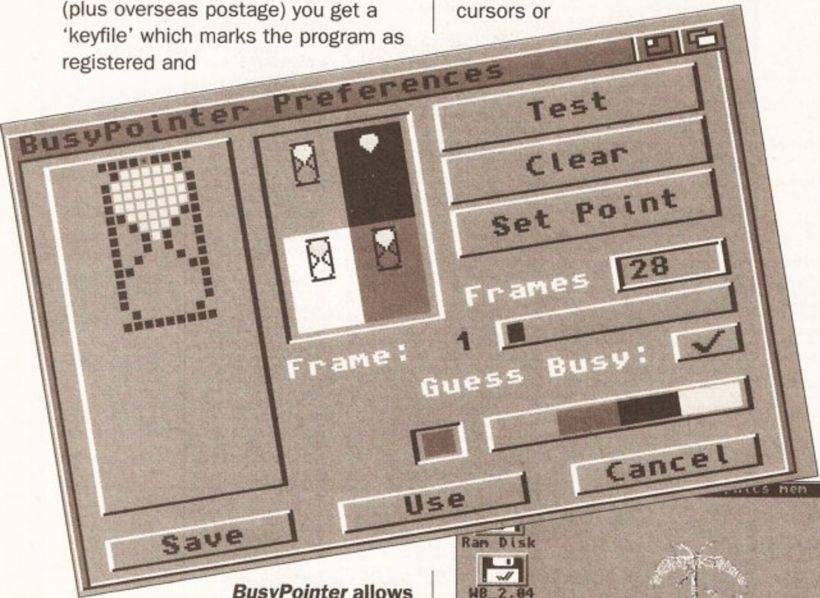
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continued from page 108

On the whole, unfortunately, *DFAddress* just isn't that good. It's a shareware program, and for DM15 (plus overseas postage) you get a 'keyfile' which marks the program as registered and means that you can save preferences, choose the location of your address file and the like. But there are better, more flexible programs of this type knocking around. Its benefits, such as fields for E-mail addresses and the ability to invoke it with a hot-key, don't outweigh the disadvantages of an inflexible format and a feeling of unwieldiness about the whole thing.



***BusyPointer* allows you to create animated 'busy' cursors – far more interesting than the Amiga's boring static watch face**

Program rating......................6/10

NICKPREFS
Fish disk 780

This is an enhancement to Workbench 2.0's *IPrefs* which adds three new preferences: *WBPicture*, *BusyPointer* and *Floppy*. *WBPicture* allows you to select any IFF picture to replace the original Workbench pattern; *BusyPointer* allows you to edit the cursor which will be displayed when a program is working; and *Floppy* can be used to suppress the empty drive clicking noise and also to mess about with step, settle and calibrate timings (don't try this at home, kids).

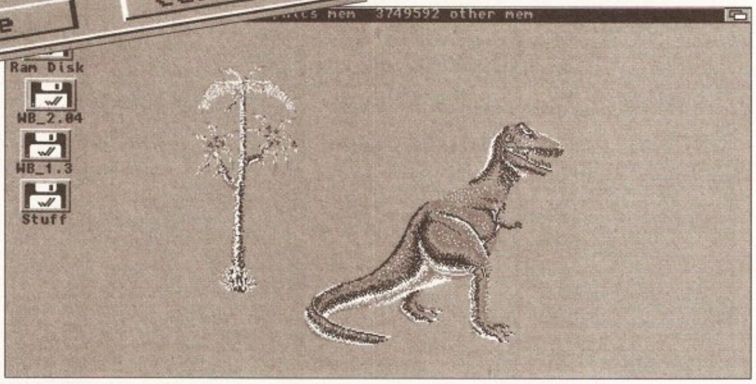
All three Prefs controllers are easy and clear to use, and all three are well worth having. It's nice to see a Workbench screen with a picture instead of the normal grey pattern, and *BusyPointer* is really very neat; four preset pointers are provided – the standard clock with one or two animated hands, an hourglass and the Workbench 1.3 'Zzz' bubble – but you can create your own cursors or load IFF brushes or Animbrushes if you prefer.

> *"these are three neat additions to the basic Workbench"*

I'm less convinced about *Floppy;* sure, stopping the drive clicking is nice, but being able to alter scary things like drive timings isn't something that I think is a good thing. On the other hand, one of the adjustable parameters is the maximum number of times that the drive will attempt to read data from a disk before it returns an error, so if you're having trouble reading a slightly corrupt disk, it's worth increasing this value for a last-ditch attempt to get at your data. Similarly, if you decrease this value from its normal 10, you'll be warned far sooner if a disk is getting less reliable. The author claims to be using a setting for this of zero, which means that the drive will only try to read the data once, with no problems.

All in all, these are three neat additions to the basic Workbench Preferences drawer, and they'll certainly be staying on my hard drive.

Program(s) rating..................9/10



Also part of the *NickPrefs* collection on Fish disk 780: *WBPicture,* one of three new Preferences managers to liven up your Workbench

LS
Fish disk 773

If you're a Unix user, *ls* will be familiar to you: it's a directory listing utility similar to, although much more powerful than, the Amiga's 'dir' command. This version, written by Loren Rittle, is based on Justin McCormick's earlier Amiga *ls* utility, and includes a large number of enhancements and bug-fixes.

You can use the program as a direct replacement for 'dir'; it can be placed in your 'c:' directory and made resident if you require. To give you some idea of the command's versatility, some of the options include: list all entries; show filenotes; sort by extension; long listing; sort by date; display entries across a line; format output; ignore files corresponding to a given pattern; show full pathnames; and, finally, list recursively. What more could you possibly ask for?

Unix fans will already have their chequebooks out in an attempt to make their Amiga look more like the box at work. To be honest, the rest of us probably won't use a tenth of the features available with *ls* – but they're there if you want them, and the program's only 12K in size. There's even a special '030 version included if you need it.

Program rating......................7/10

EXTRA COMMANDS
Fish disk 774

Talking of commands written to replace or augment those supplied with AmigaDOS, Torsten Poulin has written a range of extra commands for anyone using AmigaDOS 2.04 (unfortunately they won't work on earlier systems). Like the *ls* utility reviewed above, these too are mainly based on Unix commands.

Torsten's documentation says that these new commands should be considered as beta versions, since he hasn't had time to fix all the bugs, but he documents any problems that he's come across, and many of the commands are useful enough that you can live with the occasional glitch. Here's a brief run-down of the utilities that are on the disk:

- *Common.* Reads two files and produces a three-column output: lines which only appear in the first file, lines only in the second file and lines in both files.
- *Concat.* Concatenates (joins) two or more files together.
- *Count.* Counts lines, words and characters in specified files.
- *DirTree.* Displays disk directories and sub-directories on-screen in a graphical format.
- *Head.* Prints out the first few lines of specified files – useful if you're not sure which of a number of files is the one you want.
- *Lower.* Executes a command line at a specified priority – for use when you're multitasking programs or commands.
- *Split.* Splits a file into separate parts – either giving each part a specified number of characters, or splitting the file into a predetermined number of parts.
- *Tee.* Er... according to the documentation, this "transcribes the default input to the default output and makes copies in the files specified by the TO option." Work it out if you can!

> *"It seems that more and more extra CLI commands are appearing now"*

- *Timecom.* Executes a command line and then prints the time taken to perform that execution.
- *Unique.* Reports repeated lines in a file.

These are all, to a greater or lesser extent, useful commands, and Torsten is to be congratulated for writing them. He includes full source code for each command, so you can modify them if you happen to have the inclination, and asks only that you send him bug reports and comments on the code.

It seems that more and more extra CLI commands are appearing now, and the Amiga's CLI is becoming more and more powerful as a result. This selection certainly adds a number of useful features, and can be highly recommended.

Program(s) rating..................9/10

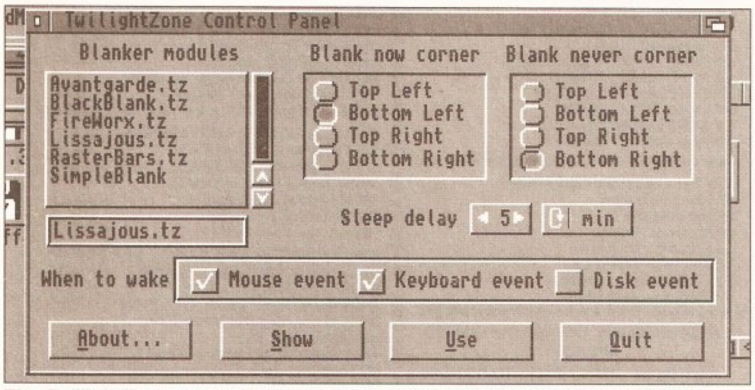
continued on page 112

continued from page 110

TWILIGHTZONE
Fish disk 782

If you like screen savers, you must get hold of a copy of *TwilightZone*, a free modular screen blanker written by Rainer Koppler. It's the nearest thing to the popular Mac screensaver *After Dark* that I've seen, and it really is quite excellent.

Two versions of the program come on the disk, one for OS 1.3 users and one for those of us with OS 2.04 (or presumably higher, though I couldn't test this). Although version 2.0 isn't yet a commodity, the author says that he's going to implement this as soon as possible.



The *TwilightZone* control panel: at last, a really good screen saver for the Amiga – and, to top it all, it's absolutely free!

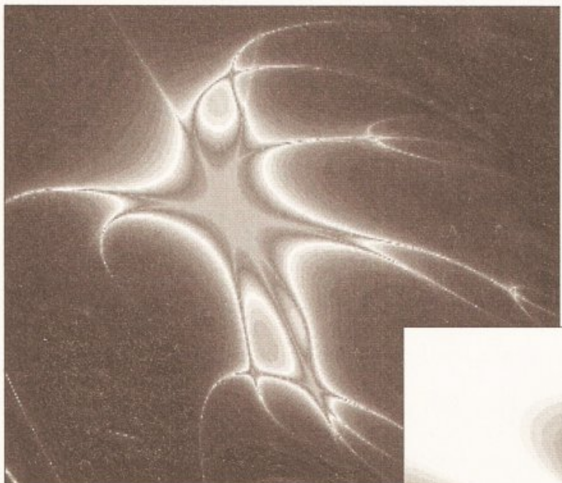
Installation is a simple matter of copying the files to your hard disk (or startup floppy). There is an auto-install icon supplied, but it wouldn't work on my Amiga. Still, all you have to do is copy one library to your LIBS: directory and the main program plus modules to your hard disk, so it isn't too much of a problem.

The idea of the program is that you can choose from a variety of different 'modules' to use when your screen blanks. This selection is done from a 'control panel' which demonstrates that Rainer has borrowed ideas from the Mac's user interface in general, and modular Mac screensavers in particular. The names of the supplied modules are displayed in a scrolling window – just click on one to select it. There are options for 'blank now' and 'blank never' corners of the screen – just move the mouse to the 'blank now' corner and the screen blanker will cut in automatically, while putting it in the 'never blank' corner will make sure that your screen display isn't interrupted. There is also, of course, an option to engage the screen blanker after a set amount of time when no action has taken place.

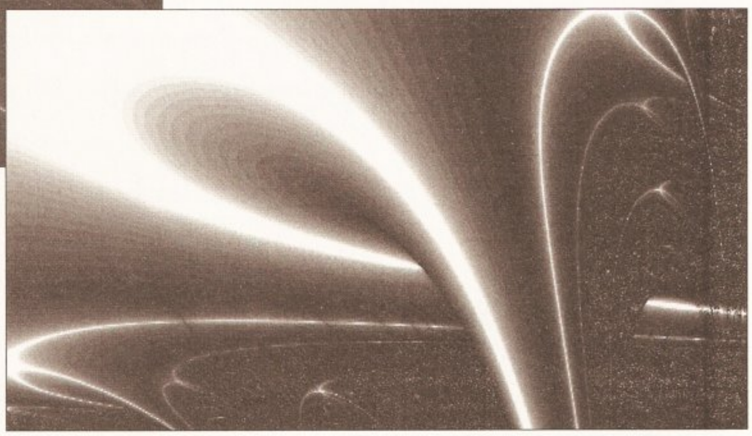
"You can choose from a variety of different 'modules' to use..."

You can specify when the blanker 'wakes up' – there are choices for moving the mouse, hitting a key or inserting a disk, or any combination of these. Finally, a 'Show' button demonstrates the selected blanking module without you having to close the Control Panel. Once running, the Control Panel can be brought up by pressing the **Right-Amiga**, **Right-shift**, **Escape** key combination.

The supplied modules are reasonable, and one in particular – Lissajous – is quite stunning. This displays a number of coloured, shaded balls bouncing around the screen in a variety of shapes.



Part of Lyapunov space – the program's author calls this one 'spider'... and on the right: 'metal'



The manual for *TwilightZone* includes a section on how to write your own add-in modules. You'll need to be adept at assembly language programming to do this, but hopefully this means we'll see the release of a number of extra modules in the near future from other programmers as well as Rainer.

There are those (normally including me) who say that screen savers are a waste of time and processing power – if you're going to leave your computer on for a considerable length of time, turn your monitor brightness down or switch it off altogether. However, I'm prepared to make an exception for *TwilightZone* – which is an exceptional program, and comes highly recommended.

Program rating 10/10

LYAPUNOVIA
Fish disk 784

Lyapunov space is a mathematical space named, according to author Jesper Juul, after Russian mathematician Aleksandr M Lyapunov. "If the Mandelbrot set is the most complex object in mathematics," says Juul, "Lyapunov space must be the juiciest, spiciest and most outrageous object ever found within numbers." He then goes on to describe (roughly) what Lyapunov space actually is, and what its differences and similarities to the Mandelbrot and Julia sets are.

"the juiciest, spiciest and most outrageous object ever found..."

The program itself, as you'd expect, generates images in this space. It does so fairly quickly, although obviously that depends on the complexity of the image and number of colours that you want to use, and will allow you to zoom in and out from an image. There's support for up to 32 colours and several different pre-set palettes, which are editable. The palettes can also be set to cycle, which shows off the images to startling effect.

A number of sample sets of co-ordinates are supplied, along with a couple of IFF images – which are shown here. They should give you some idea of just how different and exciting Lypunov space is.

This program is shareware – the author requests $15 or DM25. If you're interested in the odder aspects of mathematics and stuff, this should be a small price to pay for what is, I believe, the first Amiga program to explore this particular subset of maths. It certainly makes a change from all those bloody Mandelbrot programs!

Program rating 9/10

EGOMOUSE
Fish disk 778

This is a hack by BJ Lehahn which makes your mouse pointer turn towards the direction that you move your mouse. Move it down the screen and the pointer turns downwards. Move it to the right and the cursor turns right... you get the idea.

According to Fred Fish's contents list, this is a popular hack on the Macintosh; well, it's not something I've come across on that machine – and for good reason. It's incredibly irritating after the first 'wow, that's cute' reaction – for some reason it makes accurately clicking on objects far more difficult than usual. Still, it works, and some people may find it fun – just not me.

Program rating 3/10

WFILE
Fish disk 776

If you find yourself passing Amiga word processor files over to people using PCs, or if you receive lots of PC (or Mac, or even Unix) files which you want to use on your Amiga, *WFile* could be the answer to your prayers.

The problem with word processor files from other computer systems is that there are often extraneous characters in the file – for example, you may find that there is a carriage

return character at the end of each line, which you have to strip out in order for your word processor to wrap lines correctly. Or perhaps, rather than tabs, the other system has put in eight spaces instead. Unless you have a utility which corrects this sort of thing, you can sometimes find yourself spending hours correcting the problems; *WFile* is just the utility to prevent this.

WFile is invoked from the Shell, and offers the following options:

- Expand tabs to multiple spaces.
- Shrink multiple spaces to a tab.
- Map a character (such as a foreign letter) to another one.
- Add or strip carriage return codes from the end of each line.
- Concatenate lines.

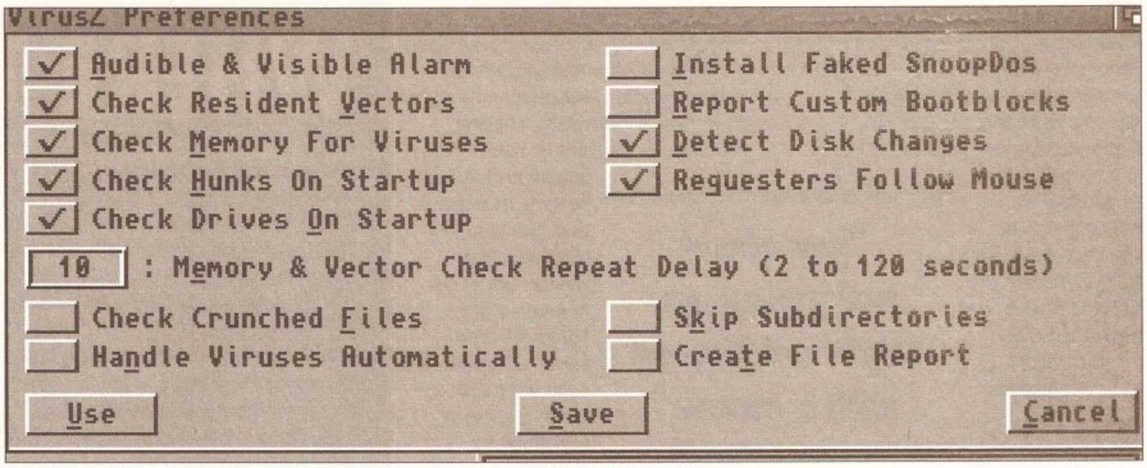
The options are invoked and controlled by the use of parameters following the 'wfile' command. However, there are six 'templates' already built in to the program, for things such as Amiga to IBM, Amiga to Unix and Unix to IBM conversion. Furthermore, you can create a plain text file with controlling parameters of your own choosing, and then tell *WFile* to use that file as a template.

Once you've got the hang of the parameters – they are all explained in the doc file provided, but the author's German to English translation sometimes makes the descriptions a little hard to follow – *WFile* will save you loads of time. It's certainly worth checking out.

Program rating 7/10

MACRO 1.0
Fish disk 786

This is another example of a small, useful program that performs a simple task with no fuss. Author Piero Filippin has written this small macro recording and playback program for anyone whose favourite word processor, comms package or whatever doesn't have a built-in macro recorder. Once run from the Shell it creates a tiny title bar to remind you that it's there, and leaves you to get on with your work. To record keypresses (up to 1,000), hit **Left-Shift**, **Left-Alt**, **Control [**. When you've finished typing, hit the same key combination but with the closing square bracket, **]**. Then to insert those characters just place the cursor wherever you want (including in a different window) and hit **Left-Shift**, **Left-Alt**, **Control i**. And that's all there is to it. The program doesn't insert the characters incredibly fast, but it works and doesn't seem to cause any crashes. The only complaint I have is that it doesn't seem possible to quit the program without re-booting.



Keep those nasty viruses at bay with *Lemsip*... er, I mean *VirusZ* of course

Program rating 7/10

VIRUSZ
Fish disk 786

Viruses are a fact of life, and every Amiga owner should have at least one anti-virus program. It's only when your machine becomes infected and you lose months of work that you realise just what you'd like to do to the people who write these vicious little programs, but until you actually get in a room alone with a big stick and one of these cretins, a program like *VirusZ* is probably the best you can do.

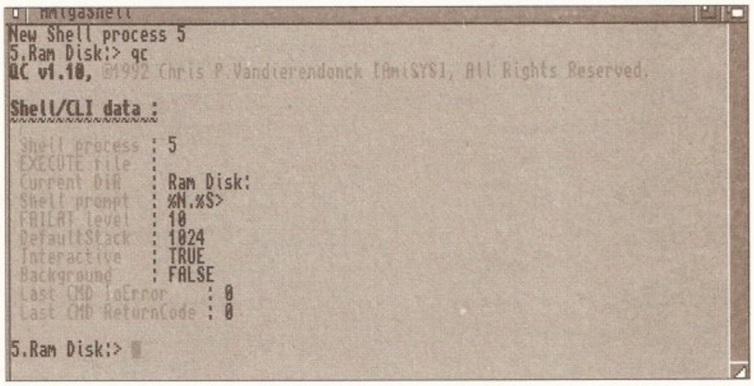
> "every Amiga owner should have at least one anti-virus program"

This release (2.27) recognises 196 bootblock viruses, 316 custom bootblocks and 76 file viruses. Note, though, that by the time you read this the program may have been updated to a later version – this will happen if any new viruses are discovered. So your best bet is to get hold of the program from a user group or PD library and specify that you need the latest version – not necessarily the version on this disk. However, you certainly should receive at least version 2.27 – complain if it's any earlier that that, because it may miss newer viruses.

The program sits in the background, and checks every disk that's inserted to see if it has a bootblock virus. It also scans memory when it's loaded to make sure that there are no viruses resident. This check is repeated at regular intervals – the default is every 10 seconds. There are other, more sophisticated options also available, and the upshot is that if you've got an infected disk or program, *VirusZ* should catch it before it has time to do anything really nasty to your data.

VirusZ is shareware: the author, Georg Hörmann, requests that you send him DM10. As he says, at the moment he's spent more than he's received, so paying your fee will go a good way to ensuring that he keeps updating what is considered to be one of the better virus checkers.

Program rating 9/10



***QC:* Everything you wanted to know about the Shell but were afraid to ask?**

QC
Fish disk 788

There is presumably a reason for this CLI command – I just can't think of one right now. *QC* is a PD utility by Chris Vandierendonck which displays information about your Shell such as its process number, current directory and prompt, FAILAT level and so on. If you've ever found yourself wondering just what size that DefaultStack was, this is the utility for you. If, like me, you're perfectly happy remaining ignorant about these facts, pass on...

Program rating.........1/10 or 10/10 (depending on how curious you are about the Shell's internal workings!)

VIEWTEK
Fish disk 787

There are plenty of picture viewers around, but *Viewtek*, a freeware program from Thomas Krehbiel, has rather more features than most. Not only will it display the usual IFF and ANIM files, but it also supports GIFs and even JPEG-encoded files. A full feature list reads something like this:

> "Viewtek... also supports GIFs and even JPEG-encoded files"

- Supports 24-bit ILBMs.
- Shows most GIF-format images.
- Shows most JFIF-format JPEG images.
- Shows most ANIM Op-5 format animations, with support for different palettes for each frame.
- Supports SHAM, CTBL and PCHG .
- Supports all ECS/AGA display modes.

The disk also includes a stripped-down version of the program which doesn't support GIFs or JPEG images, for those who are tight on disk space, and a version which supports true 24-bit display on GVP's Impact Vision 24 board.

The program can be run from the Workbench or Shell, and boots with a Requester from which you can select the file to view. If the program doesn't think that the file is a legitimate image, it will just return you to the Requester – a message telling you that there was a problem with the file would have been a bit nicer.

But really, there's no better option – this is one of the most comprehensive file viewers available. Now if it just supported *PowerPacker* images...

Program rating 9/10

QMOUSE
Fish disk 789

In *QMouse's* 3,000 or so bytes author Dan Babcock has managed to cram just about everything you might want to do with a mouse. It supports things such as automatic window activation after **Amiga-M** and **Amiga-N**, mouse acceleration, clicking windows to the front or back when you hit both mouse buttons at once, and 'SunMouse' (activates the window under the mouse pointer). There are also some extra features such as 'PopCLI', which creates a new Shell on demand.

"just about everything you might want to do with a mouse"

You'll probably find that you don't use many of these features at all, but *QMouse* is worth getting even if you only use a couple. The advantage of having all the functions in one program is that there's far less danger of crashes due to programs clashing with each other.

Program rating 9/10

WHERE TO GET IT

There are two main ways to get hold of Amiga PD and shareware: from a bulletin board or from a PD library.

The advantage of using a bulletin board is that often the latest software is uploaded as soon as it's available. On the down side, you need a modem to connect, and you'll have to pay phone charges (and sometimes a connection fee to the bulletin board as well).

There are a growing number of bulletin boards with a wide range of Amiga software available for download. Check out 01-for Amiga (071 377 1358) and the Cheam Amiga Bulletin Board (081 644 8714). Another good option is joining CIX (the Compulink Information eXchange), which not only has Amiga software but also contains conference and file areas on a wide range of subjects. Many of the *Amiga Shopper* writers have accounts on CIX, so you can get first-hand advice on your problems, too. For more details, call CIX on 081 390 8446 (voice) or 081 390 1255 (modem).

If you don't want to use a bulletin board, the other way to get PD software is from a PD house. Many advertise in *Amiga Shopper*, and you'll find a comprehensive list of names and addresses at the end of this article. Expect to pay between 99p and about £2.50 per disk – there's often a discount if you buy in bulk, too. As for the difference between the companies which charge 99p and those which charge £2.50 – well, try both types. There are brilliant, totally professional PD houses which charge less than a quid, and there are totally incompetent (dis)organisations which charge more than twice that.

UK PD HOUSES

Amiganuts United
169 Dale Valley Road
Hollybrook
Southampton

AMOS PD
1 Penmynydd Road
Penlan
Swansea
SA5 7EH

Anglia PDL
115 Ranelagh
Felixstowe
Suffolk
IP11 7HU
☎ 0394 283494

Blitterchips
Cliffe House
Primrose Street
Keighley
BD21 4NN
☎ 0535 667469

Crazy Joe's
145 Effingham Street
Rotherham
South Yorks
S65 1BL
☎ 0709 829286

Deltrax PD
36 Bodelwyddan Ave
Old Colwyn
Clwyd LL29 9NP
☎ 0492 515981

Deja Vu
7 Hollinbrook
Beech Hill
Wigan WN6 7SG
☎ 0942 495261

Essex Computer Systems
118 Middle Crockerford
Basildon
Essex
SS16 4JA
☎ 0268 553963

George Thompson Services
Cucumber Hall Farm
Cucumber Lane
Essendon
Herts
AL9 6JB
☎ 0707 664 654

ICPUG
PO Box 1309
London
N3 2UT
☎ 081-346 0050

NBS
1 Chain Lane
Newport
Isle Of Wight PO30 5QA
☎ 0983 529594

PD Soft
1 Bryant Ave
Southend-on-Sea
Essex
SS1 2YD
☎ 0702 466933

Pentire PD
10a Hag Hill Lane
Taplow
Maidenhead
Berks SL6 0JH
☎ 0628 666641

Riverdene PDL
30a School Road
Tilehurst
Reading
Berkshire RG3 5AN
☎ 0734 452416

Telescan Computer Services
Handsworth Road
Blackpool FY5 1SB
☎ 0253 22296

Sector 16
160 Hollow Way
Cowley
Oxford
☎ 0865 774472

Seventeen Bit Software
PO Box 97
Wakefield
West Yorks
WF1 1XX
☎ 0924 366982

Software Expressions
Unit 4
44 Beauley Road
Southville
Bristol BS3 1PY
☎ 0272 639593

Softville
Unit 5, Stratfield Park
Elettra Avenue
Waterlooville
Hants PO7 7XN
☎ 0705 266509

Startronics
4 Arnold Drive
Droylsden
Manchester M35 6RE
☎ 061 370 9115

Vally PD
PO Box 15
Peterlee
Co Durham SR8 1NZ
☎ 091-587 1195

Virus Free PD
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Swindon
Wiltshire SN1 5AR
☎ 0793 512321

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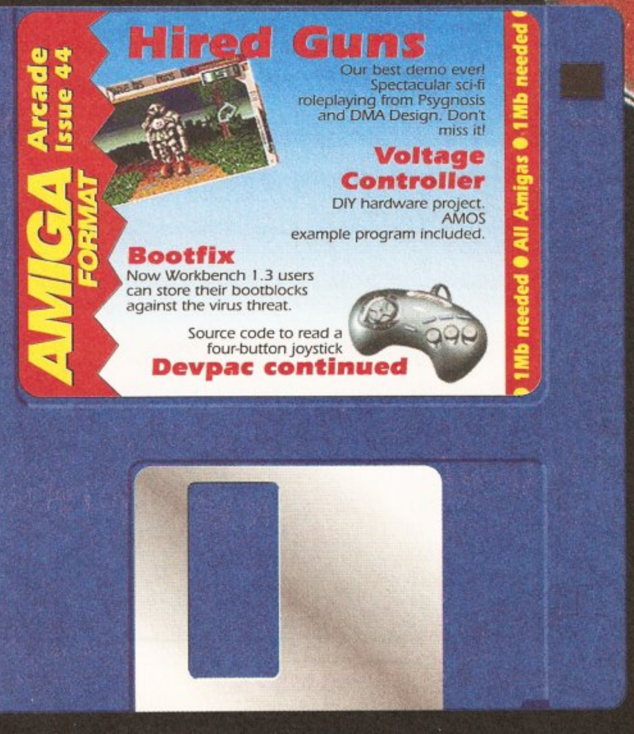
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Welcome to the *Amiga Shopper* Buyer's Guide, your regular guide to what's hot and what's not in the Amiga market place. It's designed as a simple-to-use yet comprehensive guide which will help you to make the right buying decisions. The Buyer's Guide will run each and every month and, as new products are released and others discontinued, we'll be updating it accordingly. This month we bring you what is possibly the most comprehensive guide to public domain software for the Amiga owner. It may not include each and every PD product ever produced for the Amiga (that would take up virtually the whole of *Amiga Shopper!*), but rest assured that all the major titles are here.

BUSINESS SOFTWARE

Program	Library	Disk	Type	Issue	Rating
TextPlus 3.0	PDSoft	V261	Word processor	1	****
TextEngine 3.0	Digitz	277	Word processor	13	***
WordWright	PDSoft	V28	Word processor	13	****
AZSpell	Digitz	Utl277	Spell checker	13	****
PowerSnap	Fred Fish	542	Grab screen text as ASCII file	8	*****
UEdit	AmigaNuts	1162	Text editor	8	****
AmigaFox	Office Choice	U173	Combine text with graphics	8	**
AmiBase Pro 3	AmigaNuts	–	Powerful database	9	****
Liner	Fred Fish	285	Ideas processor like Flow	10	****
NewPRT	Digitz	149	Printer drivers for PageStream	10	****
PageStreamFonts	Digitz	149	Fonts for PageStream	10	*****
EasyBanker	GTS	Home2	Home finance program	10	****
HomeHelp	GTS	Home1	Computerised grocery lists	10	****
I-Man	GTS	Home2	Inventory list management	10	***
MultiPlot	Fred Fish	467	Data graphing program	7	****
Power Planner	Deja Vu	Licenseware	Diary/telephone book	15	***
Power Base	Deja Vu	Licenseware	Database	15	*****
Cruiseword	PD Majik	–	Word processor	16	**
AmiCash	PS Soft	V630	Home accounts	16	***
Home Manager	PD Soft	V660	Personal organiser	16	*****
Word Power	Deja Vu	Licenseware	Spell checker	17	****
WBase	Anglia PD	U4015	Pop up Workbench database	18	**
PowerText	Deja Vu	Licenseware	Word processor	18	*****
Account Master	Various	–	Home accounts program	19	****
AmigaDex	PD Soft	V757	Pop up address book	19	*****
Will&Testament	PD Soft	V706	Template for wills	19	*****
Forms Really Unlimited	PD Soft	V782	Create your own business forms	21	*
Philo	Startronics	N/A	Databases for beginners	21	*
Atbl	Fred Fish	Fish 746	Unix-like table formatting utility	22	****
PaperBack!	Fred Fish	Fish 749	Create printed booklets with ease	22	*****
Epoch	NBS	U726	Pop up address book and calendar	22	**
BuddBase 1	Deja Vu	L/28	Powerful database program	22	*****
JCGraph Demo	Fred Fish	Fish 760	Demo of shareware graph program	23	*****
Stock Control 1.0	Deja Vu	L/111	Powerful stock control utility	23	****

MUSIC UTILITIES

Program	Library	Disk	Type	Issue	Rating
Nutcracker Suite	17-Bit Software	N/A	Tchaikovsky's Nutcracker suite	21	****
CDTV Player	Fred Fish	Fish 759	Play Audio CDs from WB on A570	23	*****
MED 3.11	AmigaNuts	973	Sound Tracker	1	*****
Module Processor	AmigaNuts	864	Convert modules to executable	1	***
Rippers Disk	17Bit	1055	Rip modules from memory	5	****
Sound Ed	Fred Fish	486	Sample editor	5	****
Module Master	TBAG	58	Play modules in various formats	9	****
K1 Editor	Fred Fish	332	Patch editor for Kawaii K1	10	*****
CZED	Fred Fish	223	Patch editor for Casio synths	10	*****
Desktop Harp	Various	–	Collection of tunes	18	*****

EMULATORS

Program	Library	Disk	Type	Issue	Rating
IBEM	VirusFree	1485	PC compatibles	3	****
A64	AmigaNuts	1030	Commodore 64	3	*****
ST Emulator	Digitz	Utl149	Atari ST	15	***
QL Emulator	AmigaNuts	1030	Sinclair QL	3	***
ZX Emulator	AmigaNuts	1030	ZX Spectrum	3	****

VARIOUS UTILITIES

Program	Library	Disk	Type	Issue	Rating
WordFinder-Plus	Virus Free PD	Licenseware	Crossword puzzle solver	21	****
File & HD Utils 3	PD Soft	V815	Various file and hard disk utilities	21	****
FindIt	Fred Fish	Fish 731	Search for named files on any disk	22	****
Fontviewer	Fred Fish	Fish 732	Keep track of all your bitmapped fonts	22	****
Megad 2.0	Fred Fish	Fish 736	Brilliant SID-like directory utility	22	*****
CFX	Fred Fish	Fish 750	File type identifier	22	*****
Pools Tools	NBS	U725	Pools predictor	22	***
Boot Logo	Fred Fish	Fish 754	Display picture during boot up	23	****
PopUpMenu	Fred Fish	Fish 756	Modified Workbench menus	23	****
GeoTime	Fred Fish	Fish 758	World Time Zone Display	23	*
ABackUp	Fred Fish	Fish 759	Hard Disk backup utility	23	****

PRODUCT LOCATOR

ARestaure	Fred Fish	Fish 760	Restore deleted files	23	*****
BootJob	**Fred Fish**	**Fish 760**	**Store game bootblocks on disk**	**23**	**
S-Text	Fred Fish	Fish 760	Create stand-alone text files!	23	**
Assassins Handy Tools	**Aardvark PD**	**U186-188**	**Three disks of handy utilities**	**23**	***
A-Gene	AmigaNuts	933	Genealogy program	1	****
Command.COM	**17Bit**	**866**	**CLI commands in RAM**	**2**	***
MessySID 2	PDSoft	V490	Access PC disks with ease	13	*****
Elements	**Fred Fish**	**593**	**Periodic table of elements**	**13**	****
Cass 1.1	Fred Fish	579	Make your own cassette covers	13	***
Badger	**Fred Fish**	**543**	**Event scheduler**	**13**	***
School TimeTable	AmigaNuts	1100	Generate school timetables	5	***
Arq	**CIX Download**	**–**	**Improved system requesters**	**8**	*****
LC24-200 Fonts	NBS	L503	Fonts for Star printers	8	****
Menu Runner	**AmigaNuts**	**1024**	**Run programs from menu**	**8**	***
ButExchange	Fred Fish	494	Reverse mouse buttons	9	****
DeafLab	**Fred Fish**	**494**	**Sign language utility**	**9**	***
PWKeys	Fred Fish	494	Manipulate windows with hotkeys	9	***
InputLock	**Fred Fish**	**494**	**Turn off mouse and keyboard**	**9**	****
RunMe	AmigaNuts	1186	Run programs from menu	9	*****
Hard Drive Special	**GTS**	**–**	**Collection of hard drive utils**	**9**	*****
ScreenMOD	TBAG	58	Modify screens and windows	9	***
Words 3	**AmigaNuts**	**–**	**Solve anagrams**	**9**	***
ClockTick	TBAG	58	2.0-like clock mouse pointer	9	****
FileSearch	**Fred Fish**	**531**	**Find files on a hard disk**	**11**	***
Format 1.1	Fred Fish	535	Replacement disk formatter	11	*****
PowerPacker Utils	**Fred Fish**	**542**	**Utilities for PowerPacker**	**11**	***
LabelMaker	Fred Fish	548	Create disk labels	11	***
ToolsDemon	**Fred Fish**	**561**	**Run programs for 2.0 Tools menu**	**11**	****
Filer	Fred Fish	562	SID clone for Workbench 2.0	11	****
AWP	**Fred Fish**	**554**	**Animate WB2.0 clock pointer**	**11**	****
RMBShift	Fred Fish	547	Select multiple icons	11	****
Smart Icon	**Fred Fish**	**316**	**Iconifies windows**	**10**	***
Flash Disk	GTS	Utils2	Disk optimiser	10	****
Snap 1.4	**Fred Fish**	**326**	**Grab screen text into clipboard**	**10**	****
SysInfo	Fred Fish	571	System information program	11	*****
MKSLens	**Fred Fish**	**574**	**Magnify area of screen**	**11**	***
Font Manager	Digitz	149	Manage your bitmap fonts	10	****
Recover	**Digitz**	**149**	**Rescue files from corrupt disks**	**10**	***
Track Display	GTS	Utils1	Shows position of drive heads	10	***
FastDiskII	**GTS**	**Utils1**	**Disk optimiser**	**10**	***
FileMaster	GTS	Utils1	Binary file editor	10	*****
DiskSpeed	**GTS**	**Utils1**	**Disk drive benchmark program**	**10**	****
Formatter	GTS	Utils1	Replacement disk formatter	10	***
SetNoClick	**GTS**	**Utils1**	**Turn off annoying drive click**	**10**	***
DevRen	GTS	Utils1	Rename devices including DF0	10	****
LockDevice	**GTS**	**Utils1**	**Better AmigaDOS 'Lock' command**	**10**	****
Label Print	Fred Fish	227	Disk label printer	10	***
Banner	**TBAG**	**52**	**Print huge banners**	**10**	****
Avail Mem	Fred Fish	285	Graphical memory monitor	10	***
DCopy	**AmigaNuts**	**700**	**Disk copier**	**10**	****
MessyDOS	NBS	U619	Read and write PC disks	6	*****
Master Virus Killer	**AmigaNuts**	**971**	**Virus killer**	**1**	****
Imploder	Fred Fish	422	File compressor	7	***
ARTM	**17Bit**	**1274**	**System monitor**	**7**	*****
File and HD management	PD Soft	V573	Hard drive utilities	15	*****
Sid 2	**17Bit**	**–**	**Directory utility**	**16**	*****
File and HD management 2	PD Soft	V575	More hard drive utilities	16	***
Outline fonts	**George Thompson**	**–**	**For ProPage and PageStream**	**16**	*****
Electronic baby book	PD Soft	V658	Record your baby's details	16	****
Astro 22	**PD Soft**	**V685**	**Astrology program**	**17**	****
Touch typing tutor	NBS	CLU03	Teach yourself touch typing	17	****
Magnetic Pages	**PD Soft**	**V688**	**Create your own disk magazine**	**17**	*****
HAM Radio	Aardvark PD	–	HAM radio utilities	18	****
MegaStation	**Five Star PD**	**U195**	**More CLI commands**	**18**	***
C Commands	PD Soft	V586	Even more CLI commands	18	***
Morse Tutor	**Deja Vu**	**L101**	**Teach yourself Morse Code**	**19**	*****
Minix Demo	PD Soft	V711	Demo of Unix-like OS	19	*****
Printer Drivers	**PD Soft**	**V724**	**Star and Canon printer drivers**	**19**	*****
Icon Mania	PD Soft	V730	Lots of new icons	19	**
Anti-Virus	**Soft Expression**	**U155**	**Kill those viruses**	**19**	*****
CG Fonts	PD Soft	V713	Lots of Compugraphic fonts	19	****
X-Stitch	**Deja Vu**	**Licenseware**	**Pics to knitting patterns**	**19**	****
Distance	Deja Vu	Licenseware	HAM radio utility	20	****
Main Event	**Soft Expression**	**U149**	**Event scheduler**	**20**	****
Disk Manager 2	Various	–	Disk cataloguing program	20	****
VCR Tape Filer	**Fred Fish**	**721**	**Organise your video collection**	**20**	***

PRODUCT LOCATOR

AniMan	Fred Fish	722	Voice control your Amiga	20	***
DiskMate	**Fred Fish**	**723**	**Disk copier**	**20**	*****
BackUp	Fred Fish	724	Hard disk back-up utility	20	*****
HAMLab 2 Demo	**Fred Fish**	**726**	**Powerful image processor**	**20**	*****
COMMS UTILITIES					
LHA 1.11	Fred Fish	593	Archiving utility	13	****
Phone Line Watcher	**TBAG**	**58**	**Keep track of phone bill**	**9**	****
Term 1.8A	Fred Fish	534	Terminal Program for WB2.0	11	*****
NComm	**17Bit**	**1275**	**Terminal Program**	**7**	****
BBBBS	Fred Fish	729	Bulletin Board System	20	****
PROGRAMMING UTILITIES					
GadTool Box	**Fred Fish**	**Fish 731**	**Create Intuition font ends**	**22**	*****
ICalc	Fred Fish	Fish 742	Brilliant Shell-based calculator	22	*****
MegaEd	**Fred Fish**	**Fish 743**	**Powerful text editor**	**22**	*****
Stripit	Fred Fish	Fish 750	Strip comments from ascii source code	22	****
DICE	**Fred Fish**	**443**	**C Compiler**	**3**	*****
Copper Master	AmigaNuts	1083	Generate Copper Lists	5	***
BRef	**Fred Fish**	**494**	**BASIC cross referencing utility**	**9**	****
Power Logo	EdLib	24	Enhanced Logo Interpreter	9	***
MIDI Library	**Fred Fish**	**227**	**Program MIDI applications**	**9**	*****
PCQ Pascal	AmigaNuts	1113	Pascal compiler	6	****
NorthC	**AmigaNuts**	**1112**	**C Compiler**	**6**	****
Acc Assembler	AmigaNuts	–	Fast Assembler	6	*****
Remm and Rams	**Deja Vu**	**Licenseware**	**Map editor and scroller utilities**	**17**	***
Frac	AmigaNuts	1251	Adventure game creator	18	****
Map Editor	**AmigaNuts**	**–**	**Map editor for AMOS**	**19**	****
DPU	Fred Fish	721	Hex disk and file editor	20	****
GRAPHICS UTILITIES					
DPaint Tutorial	**Soft Express**	**U160**	**Comprehensive DPaint tutorial**	**22**	*****
CMDemo	Fred Fish	Fish 757	Demo of ASDG's CineMorph	23	***
SpectraPaint	**Slipped Disk**	**19**	**Paint package**	**3**	****
Deluxe Draw	Slipped Disk	18	Paint package	3	**
AMOS Paint	**Deja Vu**	**83**	**Paint package**	**3**	***
HAMLab	AmigaNuts	1149	Image processing	3	**
3DFont	**17Bit**	**1007**	**Text to Sculpt Object**	**3**	***
SkyPaint	TBAG	37	Text-based graphics	3	***
SlideShow Kit	**VirusFree**	**1465**	**Create your own slideshows**	**3**	****
Mandel Mountains	Softville	751	Creates 3D Mandelbrots	5	****
3D Objects Disk 1	**AmigaNuts**	**–**	**Collection of Sculpt Objects**	**8**	****
PictSaver	Fred Fish	543	Grab screens in IFF Format	9	*****
LandBuild	**AmigaNuts**	**1190**	**Fractal landscape generator**	**9**	**
Video Text Displayer	AmigaNuts	1199	Basic text scroller	9	***
Converters	**17Bit**	**1221**	**Image conversion tools**	**9**	***
Vector Designer	AmigaNuts	–	Vector graphics designer	9	**
Plasma	**Fred Fish**	**573**	**Fast fractals program**	**11**	***
BezSurf 2	Fred Fish	315	Create shaded 3D objects	10	***
DrawMap	**Fred Fish**	**315**	**Generate maps of the world**	**10**	***
Sprite Designer	AmigaNuts	1102	Create animated sprites	6	**
ImageLab	**PDSoft**	**V518**	**Image processing program**	**12**	****
Desktop video pack 2	Anglia PD	–	Various DTV utilities inc titler	17	***
FracScape	**Various**	**–**	**Fractal landscape generator**	**18**	*****
EDUCATIONAL SOFTWARE					
WarBook	Asgard Software	Freeware	History of World War 2	21	***
ChemBalance	**Fred Fish**	**Fish 759**	**Balance chemical equations**	**23**	****
Learn&Play	Riverdene	Mis637	Maths/Reflex/Logic	5	****
Simon	**Deja Vu**	**APD135**	**Reflex/Memory**	**5**	***
Space Maths	Deja Vu	APD135	Maths	5	****
TouchStones	**Deja Vu**	**LPD18**	**Logic**	**5**	****
Shapes	Riverdene	GAM907	Maths/Logic	5	****
Quingo	**Deja Vu**	**LPD21**	**3 'R's**	**5**	***
Treasure Search	Deja Vu	APD2	Maths/Logic	5	***
JigMania	**Deja Vu**	**LPD13**	**Maths/Logic**	**5**	****
Spell4Fun	AmigaNuts	1146	Spelling	9	****
Maths4Fun	**AmigaNuts**	**1146**	**Maths**	**9**	****
XTables	AmigaNuts	1146	Maths	9	*****
Runes	**DTP**	**OS125**	**Mystic runes explained**	**18**	***
4 Stroke Engine	PD Soft	V738	Demonstrates 4 stroke engine	19	****
Complete Bible	**PD Soft**	**V715-717**	**Complete Bible on three disks**	**19**	****
Constellations	Astronomy News	–	Info on stellar constellations	20	***
Maths Reflex	**Anglia PD**	**C728**	**Test your maths**	**20**	****

FOR SUPPLIER INFORMATION ON ALL THE PRODUCTS LISTED ABOVE SEE UK PD HOUSES PAGE 114

BUYING ADVICE FOR SHOPPERS

Whether buying over the phone or at a local store, here's our advice on how to get what you want

BUYING IN PERSON

- Where possible, always test any software and hardware in the shop before taking it home, to make sure that it works properly.
- Make sure you have all the necessary leads, manuals or other accessories you need.
- Don't forget to keep your receipt.

BUYING BY PHONE

- Be as clear as possible when stating what you want to buy. Make sure you confirm all the technical details of what you are buying. Some things to bear in mind are version numbers, memory requirements, other required hardware or software and compatibility with your particular model of Amiga (that is, make sure you know which version of Kickstart you have).
- Check the price you are asked to pay, and make sure that it's the same as the price advertised.
- Check that what you are ordering is actually in stock.
- Check when and how the article will be delivered, and that any extra charges are as stated on the advert.
- Make a note of the date and time when you order the product.

BUYING BY POST

As with buying by phone, you should clearly state exactly what it is you are buying, at what price (refer to the magazine, page and issue number where it's advertised) and give any relevant information about your system set-up where necessary. You should also make sure you keep copies of all correspondence both to and from the company concerned.

MAKING RETURNS

Whichever method you buy by, you are entitled to return a product if it fails to meet any one of the following three criteria:

- The goods must be of 'merchantable quality'.
- The goods must be 'as described'.
- The goods must be fit for the purpose for which they were sold.

If they fail to satisfy any or all of the criteria, then you are then entitled to:

- Return them for a refund.
- Receive compensation for part of the value.
- Get a replacement or free repair.

When returning anything, ensure that you have proof of purchase and that you return the item as soon as possible after receiving it. For this reason it is important that you check the hardware or software as soon as it is delivered to make sure everything you ordered is there and works as it is supposed to.

HOW TO PAY

Paying by credit card is the most sensible way, whether buying in person, by post or on the phone, because you may be able to claim the money from the credit card company even if the firm you ordered from has gone bust or refuses to help sort out your problem.

Otherwise, you should pay by crossed cheque or postal order – never send coins or notes through the mail.

GETTING REPAIRS

Always check the conditions of the guarantee, and servicing and replacement policy, so that you know what level of support to expect. Always fill in and return warranty cards as soon as possible, and make sure that you are aware of all the conditions contained in the guarantee.

BUYING PD

Even though PD software is relatively inexpensive, you should still apply the guidelines set out above, making sure that you confirm all orders as clearly as possible.

Shopping around is still important when buying PD because different houses charge different prices for the same disks. There is no set pricing structure for disks, but bear in mind that PD houses are, in theory, supposed to be non-profit making operations. AS

A CHECK LIST FOR MAIL ORDER BUYING

1 **Make sure you know exactly what you want. Draw up a checklist of the specifications you are looking for and what you want it to be able to do. Check with the suppliers that their product matches your list.**

2 **Will the product you have in mind work with your existing set-up, and anything else you are planning to buy?**

3 **Can you see a demonstration? Many products are on display at computer shows around the country.**

4 **Are there any hidden extras? Does it need 1Mb to run, or a hard disk?**

5 **What technical support is provided by the supplier? Does the manufacturer offer after-sales advice? Check before you buy.**

6 **Check the guarantee terms. How long is the free warranty? What does it offer?**

7 **Draw up a list of these details and make them a condition of your order.**

8 **Check the price and delivery details when you order, and make a note of them.**

9 **Note down when you placed the order and who you spoke to.**

10 **When it arrives, check everything carefully. If anything is missing, don't use the product at all – contact the supplier. If it doesn't work, make the obvious checks such as the fuse. If it still doesn't work don't try to fix it – contact the supplier.**

ADVERTISERS INDEX

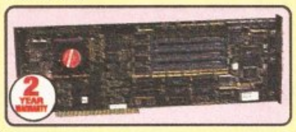
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ACCELERATORS

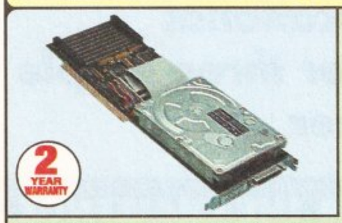
FOR THE AMIGA 1500/2000/4000

All GVP G-Force accelerators can be turned into a hard card by adding a Mount Kit (GVA 4251 - £34.95). Any 1" SCSI drive can then be mounted on to the accelerator.



	030 25MHz	030 40MHz	030 50MHz	040 33MHz
Processor	68030EC	68030EC	68030	68040
Speed MIPS	7.48	12.1	15	30
Speed MHz	25	40	50	33
Math co-proc	68882	68882	68882	Built-in
Standard 32-bit RAM	1Mb	4Mb	4Mb	4Mb
Maximum 32-bit RAM	13Mb	16Mb	16Mb	16Mb
Extras	SCSI	SCSI	SCSI	SCSI Ser/Par
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PRICE	£499	£799	£1099	£1499

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- *Factory installed Hard Drives*
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The Impact II HC8 hard cards are the equivalent of the HD8+ hard drive, but for the 1500 and 2000 models. They are some of the fastest hard drives available, and incorporate an unpopulated 8Mb RAM expansion.

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PLUG-IN HARD DRIVE AMIGA 500/500PLUS

The **A500-HD8+** provides the ultimate in hard disk performance, memory expansion and future expandability for the Amiga 500. It incorporates the same VLSI custom chip and FAAAST ROM SCSI driver which are used in GVP's Series II SCSI/RAM controllers for the A1500/2000. As a result the **A500-HD8+** offers unbeatable hard disk performance. The easy-access Autoboot/Game Switch allows the hard disk to be disabled, ensuring compatibility with the few games that will not work with a hard disk.

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'GVP claims this is the fastest hard drive in the world and none of our tests could prove that wrong ... Untouchable. THE choice'
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HD8+ HARD DRIVE	£299 INC VAT Ref: HAR 0840	£399 INC VAT Ref: HAR 0888	£499 INC VAT Ref: HAR 0922	£599 INC VAT Ref: HAR 0933

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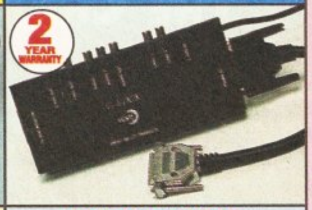
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- *8-bit stereo sampler*
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For the semi-professional and audio hobbyist a high quality 8-bit stereo sound sampler that connects into the parallel port on any Amiga 500, 600, 1500, 2000 or 3000 computer. Combined with one of the fastest, most powerful and easy-to-use sound and music editing programs available. Includes 4-track soundtracker file compatible sequencer.

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GVP's G-lock genlock is a true price/performance breakthrough. The G-lock genlock works with all Amiga computers and even supports the new Chroma Key modes of the ECS/AA chip set. It is the only choice for the mid-range Amiga video enthusiast.

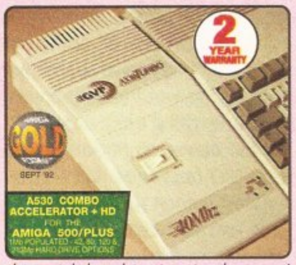
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HD8+ HARD DRIVE / A530 HD & ACCELERATOR	HD8+	A530
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PLUG-IN HARD DRIVE + ACCELERATOR AMIGA 500/500 PLUS

The **GVP A530** incorporates the same 68030EC processor found in most of the new GVP G-Force accelerator range, as well as using the same VLSI custom chip and FAAAST ROM SCSI driver that is used in GVP's Series II SCSI/RAM controllers for the A1500/2000.

It also incorporates the Motorola 68030EC processor running at a blistering 40MHz and the latest in hard disk technology with a factory installed and formatted 1" high, low power, 3½" SCSI hard disk offering storage capacities up to 213Mb. Additional SCSI peripherals can be attached to the external SCSI port. Up to 8Mb of 32-bit wide Fast RAM expansion can be installed, using state-of-the-art SIMM memory modules (1Mb supplied as standard). A 68882 maths co-processor can also be added to the unit to boost the machine's math calculations. Every **GVP A530** has its own dedicated power supply.



"... the build quality is excellent ... in terms of performance, their gear is the best ... their equipment is worth every penny".
94% AMIGA FORMAT 9/92

PLUG-IN HARD DRIVE & ACCELERATOR OPTIONS

MODEL	42Mb	80Mb	120Mb	213Mb
A530 COMBO HARD DRIVE & ACCELERATOR	£699 INC VAT Ref: HAR 0962	£799 INC VAT Ref: HAR 0968	£899 INC VAT Ref: HAR 0974	£999 INC VAT Ref: HAR 0983

PC EMULATOR

PLUG-IN OPTION FOR HD8+ & A530

- 16MHz 80286 processor
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This powerful 286 emulator module simply plugs into the "mini-slot" of the GVP HD8+ or A530 (without invalidating the warranty). It has full access to the Amiga's resources and allows you to run PC and Amiga programs at the same time, giving you two computers in one.

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Before you decide when to buy your new Amiga products, we suggest you think very carefully about WHERE you buy them. Consider what it will be like a few months after you have made your purchase, when you may require additional peripherals and software, or help and advice. And, will the company you buy from contact you with details of new products? At Silica Systems, we ensure that you will have nothing to worry about. We have been established for almost 14 years and, with our unrivalled experience and expertise, we can now claim to meet our customers' requirements with an understanding which is second to none. But don't just take our word for it. Complete and return the coupon now for our latest FREE literature and begin to experience the "Silica Systems Service".

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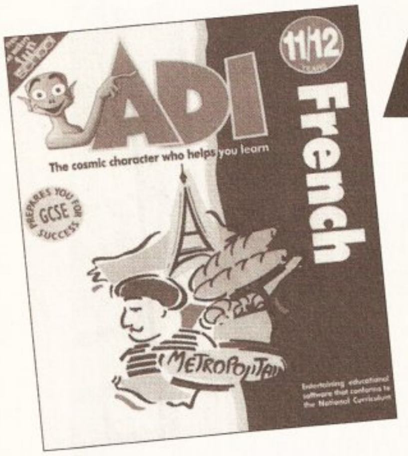
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WIN • WIN • WIN • WIN • WIN • WIN • WIN • WIN

Be smart – enter our ADI competition



Thanks to those nice people at Europress Software we've got fifteen copies of ADI educational programs up for grabs – just answer three simple questions and you could be a winner

This month we've teamed up with Europress Software to bring you bundles of the latest educational software. The *ADI* and *Fun School* series of programs are designed to make learning a doddle on the Amiga

The *Fun School* programs are aimed at the youngest users and include *Merlin's Maths*, *Spelling Fair* and *Paint and Create*. All are simple to use and incorporate eye-catching graphics and rewarding sequences to help make learning easy and fun.

For the eleven to fifteen year-old there are the packages *ADI Maths*, *English* and *French* which feature a jolly little extra-terrestrial chappie, *ADI*, who offers the child help, congratulations and encouragement as they learn.

Each of the fifteen prize winners will get a program of their choice (worth £25.99) along with a gift bag stuffed with badges, pencils and other goodies.

To enter, just write the answers to the three questions in the panel on a postcard (or back of a sealed envelope) and send it to:

ADI goes to school
Amiga Shopper
29 Monmouth Street
Bath BA1 2DL

The closing date is April 5. One entry per household please, otherwise we'll get cross. Please state if you would rather your name is not included on a mailing list. AS

THE CHALLENGE • THE CHALLENGE

1. Which of ADI's extra-terrestrial chums had to 'phone home'?
a) Superman
b) ET
c) Dr Who

2. What is the value of √56.25?
a) 7.5
b) 8.25
c) 6.75

3. The word meaning 'a place where you can stay' is spelt:
a) Accomodation
b) Accommodation
c) Acommodation

THE CHAMPIONS!

The lucky winner in our 'Fax of Life' competition from the February issue of *Amiga Shopper* is: Mrs A Curtis of Chudleigh in Devon – who'll be receiving a top-of-the-range SupraFaxModem V32bis worth £269.99.

The runner-up was Chris Hayden of Oakwood in London – his prize is the SupraFaxPlus modem, priced at £139.99

Prizes will be winging their way to both readers very soon – courtesy of the First Computer Centre. Our congratulations to both winners.

IN NEXT MONTH'S FACT-PACKED ISSUE

- Choose a word processor. We present the sequel to our most popular round-up ever, in which we examine in detail the latest in Amiga word processing technology. If you're intending to buy one of these beasties, then you can't afford to miss next month's ish.
- The cover disk returns! Another mélange of the very latest and best in public domain and shareware gets packed into the *Amiga Shopper Shareware Collection Volume III*.
- Legal advice for your mail order worries in *Amiga Advocate*.

Plus: regular columns on Amiga Answers, public domain, video, AmigaDOS, desktop publishing, programming, education, music, chaos, comms and much more

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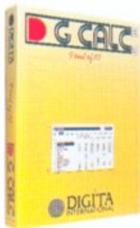
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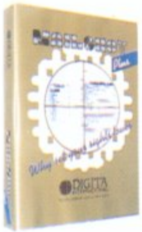
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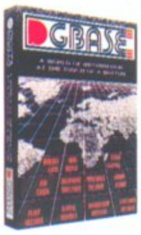
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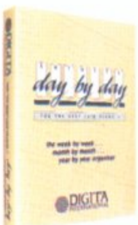
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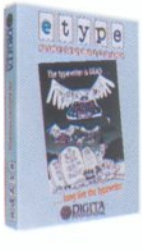
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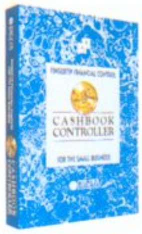


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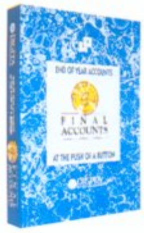


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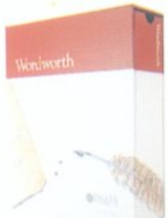


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